



Psychosomatic interface: psychological distress and perceived stress in psoriasis patients in a tertiary care hospital in South India

Abstract

Introduction: Psoriasis is worldwide but the prevalence varies among different ethnicities. Reported prevalence of psoriasis in North India of 0.8% in the seventies has now risen to 2.8%. Psoriasis is associated with significant psychological distress and psychiatric morbidity. Data on Indian patients is limited. Indian studies reported a psychiatric morbidity ranging from 32.33% to 84%. Furthermore, aspects like correlation with type and severity has not been explored in many studies. Our study aimed to assess the psychological distress and patients' perceived stress in psoriatic patients, and explore the correlation with type and severity. **Methodology:** It was a cross-sectional, descriptive study. Ninety five patients of previously diagnosed cases of psoriasis, who met the inclusion and exclusion criteria were taken up for the study. The patients were interviewed using a semi-structured questionnaire for demographics followed by detailed assessment. Tools used were- (1) Psoriasis Area Severity Index (PASI), (2) General Health Questionnaire-12 (GHQ-12), and (3) Perceived Stress Scale. Statistical analysis was done using SPSS Version 16, represented as Tables. **Results:** Psychological distress was prevalent in psoriasis (61%). Higher distress was noted in moderate severity (73%) and in guttate variety of psoriasis (100%), with significant correlation ($p=0.002$). Perceived stress was also highest in moderate severity and guttate variety. **Conclusions:** Our study reveals that distress and stress experienced by patients need not always be proportional to the disease severity as previously reported. This necessitates evaluation of all psoriasis patients for psychological morbidity and stress irrespective of plaque severity.

Keywords: Psychosomatic Disorders. Psychological Stress. Plaque.

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INTRODUCTION

"I am silvery, Scaly. Puddles of flakes form wherever I rest my flesh. Lusty, though we are loathsome to love. Keen sighted though we hate to look upon ourselves. The disease, spiritually speaking is Humiliation."

John Updike,
From the Journal of a Leper[1]

The poignant rendition of the writer John Updike, on being afflicted by psoriasis evokes the relationship between stress, emotional distress, and the skin disorder. Psoriasis has been mentioned from the time of the Bible, cited as 'tzaarat'; the Greeks describing it as 'psora', the itchy lesion and coming to be known as Willan's lepra in Late 18th Century England. The name 'psoriasis' was coined by the Viennese dermatologist Ferdinand Von Hebra. The name was derived from the Greek word 'psora' which means 'to itch'.[2]

The early 20th century saw the advent of the term 'stress' by Hans Selye. He reported of a "general adaptation system", a systemic well-orchestrated adaptive response to diverse

stressors. He observed that any novelty or perturbation was associated with an elevation of adrenocortical activity, at least transiently and if the stressors proved unremitting, diverse pathological changes would be evident.[3] William Harvey in the 17th century and William Osler in the 19th century frequently alluded to the relationship between adverse life events and onset of illness.[4]

Humanity continues to be unsheltered to the capricious nature of life often fettered by various threats, which the Greeks aptly put as, "We are all but a heartbeat away from disaster." The dominant source for psychopathology has been traced to stress, known to behave as a precipitator of psychiatric illness and igniting mental anguish. Ingram stated that the skin is an extension of the mind, hence is a part of character and personality assessment. The link between the skin and brain begins in the time of embryonic development, wherein both stem from the ectoderm, and are affected by the same hormones and neurotransmitters.[5]

Psychosomatic diseases imply those illnesses where the roots are sown by psychological (thoughts, emotions,

and behaviour) issues, contrary to the term somatopsychic diseases reflecting those where the organic aspect of the disease affects the psyche.[6] Furthermore, psychocutaneous medicine speaks of the interaction between the mind, the brain, and the skin.

Psoriasis is associated with significant psychological distress and psychiatric morbidity. Factors involved include cosmetic disfigurement of the exposed areas, moderate to intense pruritus, and inhibition to attend social gatherings. National Psoriasis Foundation[7] summarised that 60% report clinically significant psychiatric symptoms and may receive a psychiatric diagnosis.

The disease impacts more than the physical ailments and includes significant physical, social, and psychological impairment. Elevated depression/anxiety scores, ruminations and obsessions, and struggles with verbal expression of emotions, especially anger, stigma, other psychosocial comorbidities experienced by patients with psoriasis are not always symmetric to or can be anticipated by usual measurements of disease severity, namely those of body surface area involvement or severity of plaques.[8] Our study aimed to assess psychological distress in psoriasis and perceived stress, and its relation to type and severity of psoriasis.

MATERIALS AND METHOD

It was a cross-sectional descriptive study, conducted over a period of 18 months from October 2011 to April 2013 at JSS Hospital, Mysore, India. This tertiary care hospital caters to the population of nearly eighteen districts. The objective of the study was to assess psychological distress and perceived stress in individuals with psoriasis, and study the correlation between type and severity of psoriasis with psychological distress and stress.

Source of data and study population

Data was collected from the psoriasis patients satisfying the inclusion and exclusion criteria, from outpatient department of Dermatology and Venerology, JSS Hospital during the study period. All the cases were screened and diagnosed by a consultant dermatologist.

Inclusion and exclusion criteria

Individuals with psoriasis for at least six months duration, aged between 18 to 65 years, of both sexes, with a clinical and histopathological diagnosis of psoriasis and with willingness to give a written consent were included in the study.

Patients refusing consent, those suffering from other chronic skin disorders apart from psoriasis, or were being treated with systemic steroids, systemic retinoids or methotrexate currently or for the last six months were excluded from the study. Patients who were having chronic systemic illness like diabetes mellitus and hypertension which may lead to depression, those with past history of psychiatric illness before the onset of psoriasis were also not included in the study.

Sampling

Systematic random sampling method was used. Among 124 patients interviewed, 110 met the inclusion criteria, out of which nine refused to give consent for the study and six were unable to provide the histopathological details for psoriasis diagnosis and were excluded from the study. Hence, the total patient population taken up for the study was 95.

Data collection

Initial screening and confirmation of the diagnosis of psoriasis with specific type was done by a consultant dermatologist. Each patient and his attendees were explained about the nature of the study and were taken up for the study only after obtaining a valid written consent from the patient. A proforma consisting of the socio-demographic and other clinical details were collected. This included the profile of the patient, such as age, sex, marital status, education, occupation, domicile, family type, family history, past history including treatment details, lifestyle factors as well as self-report of any stressful event. Modified Kuppuswamy's scale was used to classify socioeconomic status. Psoriasis Area Severity Index (PASI) was applied and severity score of each patient was noted.

The patients were screened for psychological distress using General Health Questionnaire-12 (GHQ-12), and a score of 15 and above on GHQ-12 was considered as having distress. Further evaluation for perceived stress was done using Perceived Stress Scale (PSS), where summation of the scores and highest mean was considered.

Tools used

1. Modified Kuppusawmy's scale for socioeconomic status

Kuppuswamy's scale is widely used to measure the socio-economic status of an individual in urban community, based on three variables, namely education, occupation, and income. The three variables are clearly defined and appropriate scores maintained. Each variable consists of seven categories. According to the total scores obtained in the three variables, the socio-economic status was grouped into five classes, i.e. upper, upper middle, lower middle, upper lower, and lower. In the present study, modified Kuppuswamy's socioeconomic status scale, updated by Kumar *et al.*[9] was used. The authors revised family income per month according to the modification of price index (2008).

2. Psoriasis Area Severity Index (PASI)

PASI is the gold standard for assessing psoriasis.[10] In PASI, the body is divided into four regions: head, trunk, upper extremities, and lower extremities. Body regions are divided into four parameters that need to be determined, which are: psoriasis area, erythema (redness), thickness, and scaliness. Each body region is graded differently according to the proportion of body surface area (BSA). Head is graded 0.1, trunk is 0.3, upper extremities is 0.2, and 0.4 for lower extremities. This scale is useful in clinical practice wherein examination of the lesions by visual and tactile assessment is done, assigned the PASI score based on the PASI description. The scoring is divided into mild (less than seven), moderate

(seven to 12), and severe (>12). The formula for calculating PASI score is as follows:

$$\text{PASI score} = 0.1 (\text{Eh} + \text{Ih} + \text{Dh}) \times \text{Ah} + 0.2 (\text{Eu} + \text{Iu} + \text{Du}) \times \text{Au} + 0.3 (\text{Et} + \text{It} + \text{Dt}) \times \text{At} + 0.4 (\text{El} + \text{Il} + \text{Dl}) \times \text{Al}$$

Ah means area of head involved in psoriasis.

Au means area of upper limb involved in psoriasis.

At means area of trunk involved in psoriasis.

Al means area of lower limb involved in psoriasis

3. General Health Questionnaire-12 (GHQ-12)

GHQ-12 is a self-assessment measure of psychological morbidity, often used in community settings and non-psychiatric settings.[11] Respondents had to pinpoint, on a points scale ranging from one=less than usual, two=no more than usual, three=rather more than usual, four=much more than usual, how frequently they experienced recently the different symptoms listed on the scale. Each item is rated on a four-point scale followed by two most common scoring methods: dichotomous (0-0-1-1) or Likert-like type (0-1-2-3). In our study, GHQ-12 is a screening tool to assess distress, with a score of 15 and above indicating distress.

4. Perceived Stress Scale (PSS)

PSS is a universal psychological instrument measuring the perception of stress.[12] It measures the magnitude of which situations in one's life are perceived as stressful. Queries are constructed to reveal how erratic, disordered, and overwhelming respondents find their lives. Fortright queries about immediate levels of experienced stress is included. The tool aimed to assess community samples with a minimum of junior high school education. Queries in PSS tap feelings and thoughts during the past month. Scoring involves flipping over the scores (e.g. zero=four, one=three, two=two, three=one, and four=zero) to the four positively stated questions (questions four, five, seven, and eight) and then totaling across all scale questions.

Ethical clearance

Ethical clearance was obtained from ethical review board of JSS Medical College, Mysore, India. Ethical issues of the participants were addressed throughout the study. All participants of the study were provided with an informed consent, clearly stating the objectives of the study and their right to refuse if at any juncture they did not want to answer the questions posed.

Statistical analysis

Descriptive statistics were computed. Categorical variables were described as frequencies and percentages. For each of the scales, the central values (mean) and dispersion tendencies (standard deviation [SD]) were calculated. Chi-square test was used to compare categorical variables. Cross-tabulation and Pearson's correlation was used to correlate the variables. A confidence interval of 95% was considered; p-value of less than 0.05 was considered to be statistically significant. Data was managed and analysed using the statistical package for social sciences (SPSS) software version 16.0.

RESULTS

Sociodemographic details

A total of 95 patients suffering from psoriasis were evaluated for the study. Age of the patients ranged from 18 to 65 years with a mean age of 37.69 years. Among 95 patients, 57 were male (60%) and 38 were females (40%). Majority (97.9%) of the individuals belonged to the Hindu faith and 2.1% were Muslims. Findings were significant statistically. 35.8% were educated up to high school and majority of them (66.3%) were unskilled/semiskilled, 13.7% were skilled, 7.4% had business ventures, 8.4% were students, and 4.2% was unemployed with a significant value (Table 1).

Most of them belonged to the lower middle socioeconomic status (43.2%), followed by 31.6% belonging to the upper lower socioeconomic status. Seventy one per cent of the patients were married, 21% were unmarried, and 3.2% of the study group was found to be widowed/widower, found to be significant with gender association. Majority resided in a joint family setting (58.9%) and 34.7% lived in a nuclear family (p=0.00) (Table 1).

Type and severity of psoriasis

In our study, majority of the subjects had plaque type of psoriasis (76.8%), erythrodermic type was next most common (11.6%), 9.5% had guttate type, and pustular psoriasis was found among only 2.1%. Majority of the individuals presented with moderate severity of psoriatic lesions (52 [54.73%]) as per PASI scoring, followed by mild severity with 24 patients (25.26%), and 19 (20%) with severe lesions on PASI (Table 2).

Psychological distress

Among 95 psoriasis patients, GHQ-12 found 58 (61%) patients having distress. On studying the correlation between GHQ-12 and type of psoriasis, distress was found to be associated maximum with guttate psoriasis (100%) and least with pustular type (50%); difference between the groups was found to be statistically significant (p=0.022) (Table 3). Correlation between PASI scoring and GHQ-12 revealed that distress was more associated with moderate severity (73.1%), 63.2% with severe variety, and 33.3% with mild severity. The association of distress with severity was found to be significant (p=0.004) (Table 4).

Perceived stress

One way descriptives was used to study association of perceived stress and type and severity of psoriasis among 95 individuals with psoriasis. One way descriptives comparing the scores for perceived stress in different types of psoriasis showed that association was not statistically significant (Table 5). However, the perceived stress score was observed to be maximum in guttate psoriasis with a mean of 23 and SD of 3.162, and least mean perceived stress was observed in pustular psoriasis with a mean of 20.50 and SD of 6.36. This study showed significant statistical association between psoriasis severity and perceived stress (p=0.029). Mean perceived stress was found to be highest in moderate psoriasis

Table 1: Socio-demographic details

Socio-demographic variables	n (%)	Males	Females	Chi-square	df	p-value
Age in years						
18-25	20 (21.1)	10	10	13.06	3	0.23
26-30	17 (17.9)	11	6			
31-40	23 (24.2)	12	11			
41-50	18 (18.9)	10	8			
51-60	12 (12.6)	10	2			
61-65	5 (5.5)	4	1			
Sex						
Male	57 (60)	57	38	3.800	1	0.051
Female	38 (40)					
Marital status						
Married	71 (74.7)	42	29	78.4	2	0.00
Unmarried	21 (22.1)	14	7			
Widow/widower	3 (3.2)	1	2			
Religion						
Hindu	93 (97.9)	57	36	87.168	1	0.00
Muslim	2 (2.1)	0	2			
Socioeconomic status						
Upper middle	24 (25.3)			0.366	2	0.833
Lower middle	41 (43.2)					
Upper lower	30 (31.6)					
Domicile						
Rural	60 (63.2)	34	26	6.579	1	0.010
Urban	35 (36.2)	23	12			
Occupation						
Student	8 (8.4)	3	5	54.495	5	0.000
Unskilled	38 (40.0)	17	21			
Semiskilled	25 (26.3)	21	4			
Skilled	13 (13.7)	9	4			
Business	7 (7.4)	7	0			
Unemployed	4 (4.2)	0	4			
Family type						
Nuclear	33 (34.7)	20	13	138.053	3	0.000
Joint	56 (58.9)	31	25			
Living alone	1 (1.1)	1	0			
Extended family	5 (5.5)	5	0			

severity (22.35 ± 3.9) and mean was least in mild severity (19.75 ± 4.0) (Table 6).

DISCUSSION

As an easily noticed organ whose primary function is that of touch, the skin occupies a special place in psychiatry. With its responsiveness to emotional stimuli and ability to express emotions, bearing responsibility for self-image and

self-esteem, the skin plays a pivotal role in the socialisation process.[13] The intimate interplay between psychological factors and dermatological diseases has long been observed, i.e. the role of stress in precipitating or exacerbating a skin disease through psychosomatic mechanisms.[14]

At least 30% of dermatological patients exhibit significant psychological morbidity and psychiatric disorders. Disorders involved in this context include urticaria, atopic dermatitis,

acne, psoriasis, vitiligo, and angioedema.[15] Elevated depression/anxiety scores, ruminations and obsessions, and struggles with verbal expression of emotions, especially anger, stigma, other psychosocial comorbidities experienced by patients with psoriasis are not always symmetric to or can be anticipated by usual measurements of disease severity, namely body surface area involvement or plaque severity. Our study aimed to assess the psychological distress in patients with psoriasis, perceived levels of stress, and its association with type and severity with psoriasis.

The age of the individuals in this study ranged from 18-65 years, mean age in this study was 38.5 years and the median age of 40 years. This was similar to the study done by Cemal Bilac and colleagues.[16] It included age range from 16-81 years, wherein the mean age was 39.5±15. The study by Ghaninejad *et al.*[17] also had similar mean age, i.e. 35.34±17 years. However, mean age was not similar to the study done by Manolache *et al.*[18] (median age 50 years). The duration of illness in our study ranged from six months to 20 years with a mean duration of 8.55 years. This finding is not in agreement with the study done by Bilac *et al.*,[16] who observed the duration of disease ranged from one to 40 months with a mean of 12.4 months. The difference in duration of illness may indicate that both chronic illness as well as recent onset of illness (8.55 years vs 1.4 years) may be associated with psychological distress.

A large section of the population belonged to the lower middle socioeconomic status; thus, one may erroneously assume that psoriasis is common among lower middle class. However, considering that the hospital caters to a large population belonging to this category, the results cannot be generalised. The over representation of married subjects in this population is the logical outcome of higher age, ensuring more chances of getting married as per the cultural

norms. The majority of patients in this sample had a high school education (35.8%) followed closely by middle school educational status (26.3%) which were similar to the study done by Gaikwad *et al.*[19] (23.3% were secondary educated). This study represented 63.2% of individuals from rural residence.

Psychiatric morbidity in psoriasis has been described, and its chronic and disfiguring nature causes psoriasis to lead to immense distress. The data on prevalence of psychiatric morbidity in psoriasis among patients of the psoriasis varies from 26.25% to 95% in previous studies done abroad.[5] Indian studies reported a psychiatric morbidity ranging from 32.33% to 84%.[20,21] Another study from India found functional impairment in two third of their patients.[19] A recent Indian study by Kashyap *et al.*[22] evaluated psychological distress; in GHQ assessment, 60 patients (48%) and five controls screened were positive.

Ghaninejad *et al.*[17] assessed psychiatric morbidity by GHQ-28 bimodal scoring system with a standard cut-off of more than or equal to six; a total of 213 (51.3%) of patients were considered to have psychiatric morbidity. Various studies have found that prevalence of psychiatric illness among patients with dermatological disorder was in the range of 25-43%[23] eight to 87% as found by Attah Johnson and Mostaghimi.[24] Our study showed concordant prevalence of 63.15%. The prevalence rates found in this study was higher than the rates by 30-40% by Woodruff *et al.*,[25] 25.2% by Picardi *et al.*,[26] 33.4% by Atkan *et al.*,[27] 47.6% by Bharath *et al.*,[28] 12.2-47.6% by Bagadia *et al.*,[29] and 22.33% by Mattoo *et al.*,[21] and also compared to recent Indian studies.

Increase in severity of psoriasis lead to increased psychiatric morbidity. Similar trend was noticed in previous studies.[20,30-2] Clinical disease severity was high in those with psychiatric comorbidity as found by Saleh *et al.*:[33] mean PASI scores of 21-grade three. The prevalence of depression in patients with moderate to severe psoriasis is approximately 24% as per reports of National Psoriasis Foundation.[7]

The positive correlation seen in the study by Kashyap *et al.*[22] between the Psoriasis Disability Index (PDI) and GHQ positivity is a reflection of this trend. In our study, contrasting to studies of the past, distress was found to be more with moderate PASI scores (73.1%), followed closely with those with severe PASI scores (63.2%) showing a statistically significant correlation ($p=0.004$). Biljan *et al.*[30] also reported similar associations with psychiatric illness in 51.4% with moderate severity and 48.6% with severe clinical disease. This deviation may go to substantiate the theory that the amount of psychological distress experienced by the

Table 2: Frequencies of type and severity of psoriasis

Type of psoriasis	n (%)
Plaque	73 (76.8)
Guttate	9 (9.5)
Erythrodermic	11 (11.6)
Pustular	2 (2.1)
Severity of psoriasis (PASI)	
Mild	24 (25.26)
Moderate	52 (54.73)
Severe	19 (20)

PASI = Psoriasis Area Severity Index

Table 3: Correlation between GHQ-12 and type of psoriasis

	Type of psoriasis				Total (%)
	Plaque (%)	Guttate (%)	Erythrodermic (%)	Pustular (%)	
GHQ-12 distress					
Yes	39 (54.4)	9 (100)	9 (81.8)	1 (50)	58 (61.1)
No	34 (46.6)	0 (0.0)	2 (18.2)	1 (50)	37 (38.9)
Total	73 (100)	9 (100)	11 (100)	2 (100)	95 (100)

Contingency co-efficient=0.303; $p=0.022$ (significant), GHQ-12=General Health Questionnaire-12

Table 4: Correlation between GHQ-12 and severity of psoriasis

	Severity of psoriasis (PASI)			Total (%)
	Mild (%)	Moderate (%)	Severe (%)	
GHQ-12 distress				
Yes	8 (33.3)	38 (73.1)	12 (63.2)	58 (61.1)
No	16 (66.7)	14 (26.9)	7 (36.8)	37 (38.9)
Total	24 (100)	52 (100)	19 (100)	95 (100)

Contingency co-efficient=0.322; p=0.004 (significant) GHQ-12=General Health Questionnaire-12, PASI=Psoriasis Area Severity Index

Table 5: Association between perceived stress and type of psoriasis (one way descriptives)

	n	Mean±SD	SE	
Plaque	73	21.30±4.115	0.482	ANOVA
Guttate	9	23.00±3.162	1.054	F=0.87
Erythrodermic	11	22.82±3.920	1.182	p=0.46
Pustular	2	20.50±6.364	4.500	
Total	95	21.62±4.043	0.415	

SD=Standard deviation, SE=Standard error, ANOVA=Analysis of variance

Table 6: Association between perceived stress and severity of psoriasis (one way descriptives)

	n	Mean±SD	
Mild	24	19.75±4.089	ANOVA
Moderate	52	22.35±3.900	F=3.69
Severe	19	22.00±3.815	p=0.029
Total	95	21.62±4.043	(significant)

SD=Standard deviation, ANOVA=Analysis of variance

patient may not always be proportional to disease severity or plaque severity.

It was also seen in our study that guttate variety had higher incidence of distress (100%), followed by erythrodermic psoriasis (81.8%), which showed a statistically positive correlation (p=0.022). The association between psychological distress and type of psoriasis has not been explored in earlier studies.

With respect to stress and psoriasis, studies have found that psoriasis is independently associated with stress-related disorders and behaviour disorders. National Psoriasis Foundation[7] states that female gender is predictive of higher stress levels due to psoriasis. Fortune *et al.*[31] reported the mean Psoriasis Life Stress Inventory (PLSI) score was 20 (SD 11) with a range of zero to 44 in their study. O'Leary *et al.*[34] found the mean perceived stress scores to be 26.55 with a range between 28.03-31.79. In our study, the mean perceived stress scores ranged from 20.50-23, which is concurrent with the findings of the above studies. However, whereas the range of scores was almost identical to Gupta *et al.*'s study (which reported a range of zero to 43),[35] the mean score for the present sample was notably higher than the mean score of 11.5 (SD of ten) reported by the PLSI's creators.

In the study by Fortune *et al.*,[31] perceived stress did not correlate with self-reported severity, or clinical severity

of psoriasis as assessed by PASI system. In contrast, O'Leary *et al.*[34] did not find an association between perceived stress and psoriasis severity. Among high stress reactors, disease related stress scores (Hassles score) correlated directly with psoriasis severity as per Gupta *et al.*'s reports.[35] Similarly, in a five-year retrospective study, Baughman and Sobel[36] found a greater stress reactance among patients with moderately severe psoriasis.

Our study observed similar findings with maximum mean stress scores in moderate psoriasis (22.5±3.9), and the association between severity and perceived stress was also found to be statistically significant (p=0.029). This finding goes to further the possibility that perceptual stress experienced need not be proportional to clinical disease severity as thought previously. The association of perceived stress and type of psoriasis revealed higher scores with guttate psoriasis (23±3.16) and erythrodermic psoriasis (22.82±3.92); however, the association was not found to be statistically significant. As per our knowledge, no other study has attempted to study the correlation between type of psoriasis and perceived stress.

Conclusion

The prevalence of psychological distress was high in psoriasis, consistent with previous studies. The severity of psoriatic lesions need not always correspond with same amount of distress and perceived stress as evidenced by this study. Guttate variety of psoriasis was associated with higher distress and perceived stress. Psychiatric distress in dermatology patients continues to be under-reported and under-estimated, especially in those with mild and moderate disease presentation. Emphasis on screening of all patients for psychiatric distress, irrespective of severity of presentation can provide holistic treatment. Further works to study type association with psychological aspects is necessary to shed a more conclusive light.

Limitations

We acknowledge certain weaknesses in our methodology. The major shortcoming was the sample size. A larger sample size would have allowed for results to be more generalisable. Study being of cross-sectional design, long term effects of the disorder could not be studied. Consecutive follow up could have ensured better understanding into the illness outcomes and associations. GHQ-12 is used primarily for screening psychological distress. Detailed evaluation into specific psychiatric disorders will be taken up in the subsequent study.

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