

# Psychiatric morbidity among patients with psoriasis and acne: A comparative study

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**Abstract** *Objective* To compare occurrence of psychiatric morbidity among psoriasis and acne patients.

*Methods* It was a cross-sectional, comparative study between 50 psoriasis and 50 acne patients in tertiary care hospital. For assessing severity of skin lesions Psoriasis Area Severity Index (PASI) and Global Acne severity (GEA) scales were applied on psoriasis and acne patients, respectively. Then General Health Questionnaire-60 (GHQ-60) was applied on both the patient groups and Mini International Neuropsychiatric Interview (MINI), Hamilton Rating Scale for Anxiety (HAM-A), Hamilton Rating Scale for Depression (HAM-D), Beck Depression Inventory (BDI) were applied on only those patients, who scored  $\geq 12$  in GHQ-60 (GHQ-60+ve).

*Results* Psoriasis patients had significantly higher psychiatric morbidity, in terms of both GHQ-60 ( $p=0.00$ ) and MINI ( $p=0.01$ ). 35 (70%) and 20 (40%) patients were GHQ+ve (GHQ-60score  $\geq 12$ ) and psychiatric morbidity diagnosed by MINI were 22 (44%) and 10 (20%) among psoriasis and acne patients, respectively. The psychiatric diagnosis observed by MINI were: major depressive episode (18%), dysthymia (10%), generalized anxiety disorder (12%), suicidality (12%), alcohol abuse (12%), psychotic disorders (2%) among psoriasis patients and major depressive episode (6%), generalized anxiety disorder (6%), suicidality (6%), obsessive-compulsive disorder (2%), social phobia (2%), alcohol abuse (6%) among acne patients. The severity of psoriasis and acne skin lesions positively correlated with anxiety, depression in both psoriasis and acne patients.

*Conclusion* The high psychiatric and psychosocial morbidity in psoriasis and acne patients indicates a need for regular liaison between dermatologists and psychiatrists.

**Key words**

Psychiatric morbidity, psoriasis, acne.

## Introduction

The psychiatric co-morbidity of skin disease is a vital index of the overall associated disability.<sup>1</sup> It has been established that at least 30% of dermatology patients suffer from significant psychiatric comorbidity.<sup>2</sup> These conditions are often exacerbated by psychosocial stress and develop comorbid major psychiatric syndromes.

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Biopsychosocial models in dermatology emphasize the multifactorial nature of skin disease by examining environmental, interpersonal, psychological and biological factors in determining both disease severity and the impact of the condition on functioning and life quality. While neither life threatening nor physically debilitating these conditions can severely affect social and psychological functioning and well-being. Psycho-neuro-immuno-endocrine-cutaneous model was proposed by O'Sullivan *et al.*<sup>3</sup> to explain the mind and body relationship, in which they described the relationship of stress, immune

system, environmental factors and skin disorders. Chronic and severe dermatological disorders are often associated with psychiatric comorbidity, personality characteristics, psychosocial stress, sexual and psychosocial distress and impaired quality of life (QOL). The dermatological conditions most commonly and consistently found to be associated with psychiatric or psychological morbidity are Psoriasis, Acne and atopic eczema.<sup>4,5,6</sup>

Psoriasis is a common, chronic, disfiguring, inflammatory and proliferative condition of the skin that affects about 0.1% to 11.8% population according to published reports.<sup>7</sup> There are studies that have indicated psoriasis patients to be anxious, depressed, engage in excessive worrying, restricted in everyday life as a result of their disease.<sup>5,8</sup> Acne is the most common skin disease, affecting nearly 85% of people at some time of their lives.<sup>9</sup> Although acne does not cause direct physical impairment, it can produce a significant psychosocial burden.<sup>10</sup> It has been suggested that patients with moderate-to-severe acne suffer from low self-esteem, poor body image, and experience constriction of activities and social isolation.<sup>11</sup> As part of the emotional impact increased levels of anger, frustration, depression and anxiety are also observed.<sup>12</sup>

Acne and psoriasis both are common, chronic, non-life threatening conditions with unsatisfactory treatments, having long term complication and significantly affect the psychological well-being of the person therefore present study was aimed at comparing psychiatric morbidity between psoriasis and acne patients.

## **Methods**

### ***Participants***

It was a cross-sectional and hospital based study

conducted at tertiary psychiatric hospital. Samples were recruited from the outpatient dermatological department of another tertiary care hospital. After obtaining research ethics committee approval, written informed consent was taken following complete description of the study. Samples were collected by systematic sampling. The sample size consisted of 50 psoriasis and 50 acne patients, aged between 16-50 years, with at least primary level of education. Diagnosis was made according to ICD-10 (International Classification of Diseases - Tenth Edition). Patients with known psychiatric disorders and patients on systemic steroids or isotretinoin were excluded.

### ***Assessment***

The instruments used for the assessment of the selected variables were:

#### *1. Socio-demographic and clinical data sheet*

A specially designed semi-structured proforma included various socio-demographic variables (age, sex, education, religion, residence, marital status, socioeconomic status) and clinical variables (clinical diagnosis, the age of onset, duration of illness, treatment details) were applied.

#### *2. Psoriasis Area and Severity Index (PASI)<sup>13-15</sup>*

This scale is used to assess the skin area involved and the severity of the dermatological illness. Area coverage is for head, trunk, upper limbs and lower limbs corresponding to 10%, 20%, 30% and 40% of the total body surface area, respectively. Severity assessment is done along a 0-4 scale (0-no lesion, 4-severest possible lesion) for the three target signs of erythema, infiltration and desquamation. The total PASI score, ranging from 0 to 72; 0-3 for mild, >3-15 for moderate and >15-72 for severe

psoriasis. PASI is considered as a gold standard for psoriasis.

### 3. *Global Acne Severity Scale (GEA scale)*<sup>16</sup>

This scale is a global scale for acne, which is also validated for photographs of Acne patients. It can be used either in clinical research or by the dermatologist in their office. The US FDA recommends a static global rating scale with six grades 0-5 (clear, almost clear, mild, moderate, severe and very severe).

### 4. *General Health Questionnaire-60 (GHQ-60)*<sup>17</sup>

The GHQ is a self-administered screening test, which is sensitive to presence of psychiatric disorders. The GHQ provides a measure of overall psychological health or wellness. It is a highly valid and reliable scale among the clinical and non-clinical sample. The original GHQ containing 60 items, derived from factor analysis of a checklist of 140 items. Any 12 positive scores on GHQ-60 identify a probable case.

### 5. *Mini International Neuropsychiatric Interview (MINI)*<sup>18</sup>

The MINI was designed as a brief structured interview for the major Axis I psychiatric disorders in DSM-IV and ICD-10. MINI has acceptably high validation and reliability scores than SCID-P and CIDI. It has an additional benefit of consuming less time in its application. (mean 18.7 ± 11.6 min., median 15 min ).

### 6. *Hamilton Rating Scale for Anxiety (HAM-A)*<sup>19</sup>

The HAM-A probe 14 parameters (items) and takes 15-20 minutes to complete the interview and score the results. Each parameter (item) is defined by a series of symptoms and measures both psychic anxiety and somatic anxiety. Each item is rated on 5-point scale 0-4. Total score: 0-

56, normal <17; mild anxiety: 18-24; moderate anxiety: 25-30; severe anxiety ≥30.

### 7. *Hamilton Rating Scale for Depression (HAM-D)*<sup>20,21</sup>

The HAM-D form lists 21 items, the scoring is based on the first 17. Ten items are scored on a 5-point scale, ranging from 0 = not present to 4 = severe. Eleven items are scored from 0-2. Total score ranges from 0-62; scores of less than 7 considered normal; 8 to 13 mild; 14 to 18 moderate; 19 to 22 severe and above 23 very severe. It generally takes 15-20 minutes to complete the interview and score the results. It is the most commonly used measure of depression.

### 8. *Beck Depression Inventory (BDI)*<sup>22,23</sup>

It has a high coefficient alpha, (0.80). Its construct validity has been established, and it is able to differentiate depressed from non-depressed patients. It is a subjective scale in which patient has to give a response to 20 statements on 4-point scale 0-3. Total inventory score is 0-60.

## **Procedure**

After making diagnosis of psoriasis and acne by dermatologist in dermatological outpatient department, relevant socio-demographic and clinical data were applied on both the groups. For assessing the severity of the skin disorder Psoriasis Area Severity Index (PASI) was applied on Psoriasis and Global Acne severity (GEA) scale was applied on acne patients by one of the author who is dermatologist. Then GHQ-60 was applied on both the patient groups and MINI, HAM-A, HAM-D, BDI were applied to only those patients who scored positive in GHQ-60 (≥12), by psychiatrist authors.

**Statistical analysis**

Data were analyzed using Statistical Packages for Social Sciences (SPSS Version 22). Descriptive statistics were used to define the sample characteristics. For testing the variance, chi-square, independent t-test was used. Pearson correlation was done to assess the correlation between clinical variables across study groups.

**Results**

The demographic profile of psoriasis patients was: married (58%), Hindu (84%), rural (38%), education above 12<sup>th</sup> grade (32%) and mean age of psoriasis patients were 28.24±7.15 years. This profile was statistically similar to acne patient

group except in marital status. In acne majority of patients were unmarried i.e. 64% (Table 1) The severity of skin lesions by using PASI and GEA scores respectively showed that the majority of psoriasis patients were moderate in severity (54%) and majority of acne patients were mild (34%) to moderate (32%) in severity. The mean duration of illness was 49.84±50.62 months in psoriasis, and 3 6.64±29.11 months in acne. There was no statistically significant difference in terms of duration of illness. Psoriasis patients had significantly higher psychiatric morbidity than acne patients in terms of both GHQ-60 (p=.00) and MINI (p=.01). In this study 35 (70%) psoriasis patients were GHQ+ve in comparison to 20 (40%) acne patients.

**Table 1** Comparison of socio-demographic and clinical profile across psoriasis and acne patients.

Variables		Psoriasis patients N=50	Acne patients N=50	t/χ <sup>2</sup> /Fisher's exact test	df	P value
Sex	Male	28 (56%)	21 (42%)	1.96	1	0.16
	Female	22 (44%)	29 (58%)			
Education	6 <sup>th</sup> -12 <sup>th</sup>	34 (68%)	28 (56%)	1.52	1	0.22
	Above 12 <sup>th</sup>	16 (32%)	22 (44%)			
Religion	Hindu	42 (84%)	35 (70%)	2.77	1	0.10
	Non-Hindu	8 (16%)	15 (30%)			
Residence	Rural	19 (38%)	15 (30%)	.71	1	0.40
	Urban	31 (62%)	35 (70%)			
Marital status	Married	29 (58%)	18 (36%)	4.86	1	0.03*
	Single	21 (42%)	32 (64%)			
Socioeconomic status	Higher	0 (0%)	3 (6%)	2.90	1	0.23
	Middle	16 (32%)	17 (34%)			
	Lower	34 (68%)	30 (60%)			
Mean age (years)		28.24±7.15	26.18±5.48	1.61	98	0.11
Mean duration of illness (months)		49.84±50.62	34.64±29.11			0.33

Fischer's exact test was applied where cell count was less than 5. \*indicates P <.05 \*\*indicates p<.01

**Table 2** Comparison of psychiatric morbidity across patients with psoriasis and acne.

Variables		Patients with psoriasis N=50 n (%)	Patients with Acne N=50 n (%)	χ <sup>2</sup> /Fisher's exact test (df=1)	P value
GHQ 60	<12	15(30%)	30(60%)	9.09	0.00**
	≥ 12	35(70%)	20(40%)		
Psychiatric diagnosis by MINI	Present	22(44%)	10 (20%)	6.62	0.01*
	Absent	28(56%)	40(80%)		

**Table 3** Psychiatric disorders observed by MINI in GHQ+ve psoriasis and acne patients.

Variables		GHQ+ve Psoriasis patients N=22 n (%)	GHQ+ve Acne patients N=10 n (%)	$\chi^2$ /Fisher's exact test (df=1)	P value
Major depressive episode (current)	Present	9(40.9%)	3(30.0%)	0.34	0.56
	Absent	13 (59.1%)	7 (70.0%)		
Major depressive episode (past)	Present	3 (13.6%)	0 (0.0%)	1.46	0.23
	Absent	19 (86.4%)	10 (100.0%)		
Major depressive episode, with melancholic features	Present	2 (9.1%)	0 (0.0%)	0.94	0.33
	Absent	20 (90.9%)	10 (100.0%)		
Dysthymia	Present	5 (22.7%)	3 (30.0%)	0.19	0.66
	Absent	17 (77.3%)	7 (70.0%)		
Suicidality	Present	6 (27.3%)	3 (30.0%)	0.02	0.88
	Absent	16 (72.7%)	7 (70.0%)		
(Hypo) Manic episode	Present	0 (0.0%)	0 (0.0%)	-	-
Panic disorder	Absent	22 (100.0%)	10 (100.0%)	-	-
	Present	0 (0.0%)	0 (0.0%)		
Agoraphobia	Absent	22 (100.0%)	10 (100.0%)	-	-
	Present	0 (0.0%)	0 (0.0%)		
Social phobia	Present	0 (0.0%)	1 (10.0%)	2.20	0.14
	Absent	22 (100.0%)	9 (90%)		
Obsessive-compulsive disorder	Present	0 (0.0%)	1 (10%)	2.20	0.14
	Absent	22 (100.0%)	9 (90%)		
Post-traumatic stress disorder	Present	0 (0.0%)	0 (0.0%)	-	-
	Absent	22 (100.0%)	10 (100.0%)		
Alcohol dependence	Present	0 (0.0%)	0 (0.0%)	-	-
	Absent	22 (100.0%)	10 (100.0%)		
Alcohol abuse	Present	6 (27.3%)	3 (30.0%)	0.02	0.88
	Absent	16 (72.7%)	7 (70.0%)		
Drug dependence /abuse	Present	0 (0.0%)	0 (0.0%)	-	-
	Absent	22 (100.0%)	10 (100.0%)		
Psychotic disorders	Present	1 (4.5%)	0 (0.0%)	0.45	0.50
	Absent	21 (95.5%)	10 (100.0%)		
Anorexia nervosa	Present	0 (0.0%)	0 (0.0%)	-	-
	Absent	22 (100.0%)	10 (100.0%)		
Bulimia nervosa	Present	0 (0.0%)	0 (0.0%)	-	-
	Absent	22 (100.0%)	10 (100.0%)		
Generalized anxiety disorder	Present	6 (27.3%)	3 (30.0%)	0.02	0.88
	Absent	16 (72.7%)	7 (70.0%)		
Antisocial personality disorder	Present	0 (0.0%)	0 (0.0%)	-	-
	Absent	22 (100.0%)	10 (100.0%)		

**Table 4** Correlation between severity of skin lesions , anxiety and depression in psoriasis and acne patients.

Psoriasis severity (PASI)	0.50**	0.64**	0.63**
Acne severity (GEA)	0.40**	0.46**	0.47**

\* indicates P <.05 \*\*indicates P <.01

Psychiatric morbidity diagnosed by MINI was 22 (44%) and 10 (20%) in psoriasis and acne patients, respectively (**Table 2**). The psychiatric

diagnosis as observed by MINI in GHQ +ve psoriasis patients was: major depressive episode (18%), dysthymia (10%), generalized anxiety

disorder (12%), suicidality (12%), alcohol abuse (12%) and psychotic disorders (2%). Psychiatric diagnosis observed by MINI in GHQ+ve acne patients was: major depressive episode (6%), generalized anxiety disorder (6%), suicidality (6%), obsessive-compulsive disorder (2%), social phobia (2%) and alcohol abuse (6%). The psychotic disorder was observed only in the psoriasis group while obsessive compulsive disorder and social phobia were observed only in acne group (Table 3).

Significant positive correlations found between severity of skin lesions (PASI, GEA) and anxiety (HAM-A), depression (HAM-D, BDI) in both psoriasis and acne patients (Table 4). Duration of illness was also positively correlated with anxiety and depression in both the groups, but it was not statistically significant.

## Discussion

The present study was conducted by dermatologist and psychiatrists, associated with two different tertiary care hospitals. Most of the scales used were highly valid, reliable and had been recognized worldwide in various studies. We applied General Health Questionnaire-60 (GHQ-60) to select the cases having some psychological problem then patients with GHQ - 60 score  $\geq 12$  (GHQ+ve) were subjected to a detailed psychiatric assessment and the diagnosis were made as per Mini International Neuropsychiatric Interview (MINI). In socio-demographic profile samples were matched properly except in marital status. In acne significantly more patients were unmarried in comparison to psoriasis. Acne mainly affects the face and unmarried persons seem to be more worried about their appearance so these patients frequently visit the hospital prior to marriage. This might be probable reason behind unmarried predominance in acne patients.

In terms of mean duration of illness, no significant difference has been found between both the groups. In the current study majority (54%) of psoriasis patients were moderate in severity in PASI scale. These findings are consistent with Mehta and Malhotra<sup>24</sup> study findings in which majority (58%) of psoriasis patients had moderate severity. Majority of acne patients were mild (34%) and moderate (32%) in severity in GEA scale. These findings are comparable with Golchai *et al.*<sup>25</sup> study findings. In both groups, disease-specific scales were applied to assess the severity of skin lesions, therefore, a severity of skin lesions were not directly comparable in both the groups.

Current study findings of 70% GHQ-60+ve (GHQ score  $\geq 12$ ) psoriasis patients are corroborated by Sharma *et al.*<sup>26</sup> study in which they reported 53.3% GHQ-12+ve psychiatric morbidity in psoriasis patients. It was found that 40% acne patients were GHQ+ve. These findings are similar to Mallon *et al.*<sup>27</sup> study in which they reported 41% GHQ+ve acne cases and Hughes *et al.*<sup>4</sup> study in which they screened 46% acne patients with general psychiatric comorbidity. Psychiatric morbidity diagnosed by MINI was 22 (44%) and 10 (20%) in psoriasis and acne patients, respectively. Several studies conducted earlier reported variable rates of psychiatric morbidity ranging from 11% to 87% in psoriasis.<sup>24,28-31</sup> Psychiatric morbidity among patients with mixed dermatological diseases was found to be 12.2%-47.6%.<sup>4,32,33</sup>

The prevalence of depression in psoriasis patients detected by current study (18%) is higher than the general population (3-15%).<sup>34,35</sup> But these findings are comparable with various studies, in which they reported 10%-30% depression in psoriasis patients.<sup>24,26,36,37</sup> Generalized anxiety disorder was 12%, which is supported by 3%-50% anxiety disorders reported in psoriasis patients in various studies.<sup>24,26,28,30,32</sup>

The current study showed high prevalence of suicidal ideation (12%) as compared to the general population reported 0.01%-1.2%<sup>38,39</sup> but it was comparable to 7.2% suicidal ideation in patients with psoriasis<sup>5</sup> and 7.3% in patients with acute medical illness.<sup>40</sup> In present study, alcohol abuse was 12%, which is comparable to 6% reported in Mehta and Malhotra<sup>24</sup> study. The psychotic disorder was 2% in the current study, which is almost similar to 3.3%-4% psychotic disorder reported in previous studies.<sup>24,37</sup>

Major depressive episode was found in 6% acne patients, which is comparable to 7.9% depressive disorders reported by Yazici *et al.*<sup>41</sup> in acne patients. Generalized anxiety disorder in the current study was 6%, which is supported by 0%-30% anxiety disorder reported in most of the studies of acne.<sup>37,41-43</sup> In current study, acne patients manifested no psychotic disorder and only 2% social phobia. Previously, most of the studies conducted on acne patients reported mainly depression and anxiety.<sup>43,44</sup> In contrast Behnam *et al.*<sup>45</sup> study showed 34% psychoticism and social phobia was the most common axis I disorder in patients with acne in Ozturk *et al.*<sup>46</sup> study. Acne could lead to psychological problems, including low self-esteem, lower self-attitude and self-worth, low levels of body satisfaction, hastiness, avoidance, depression, anxiety, shame, suicidal thoughts and attempts, and difficulties in applying for a job.<sup>47-51</sup> Variation in the prevalence of psychiatric disorders could be related to sample size, patient selection. It could be a reflection of the diagnostic system used i.e. MINI,<sup>24</sup> DSM-III-R,<sup>30</sup> DSM-IV,<sup>46</sup> ICD-10<sup>37</sup> and self-reporting questionnaire-24,<sup>52</sup> symptom checklist-90.<sup>45</sup>

Significantly higher psychiatric morbidity was found in psoriasis patients, in comparison to acne. The findings of more psychiatric morbidity in psoriasis can be explained by the 'stress' which is more perceived by these patients. A

factor analysis of the Psoriasis Life Stress Inventory revealed two stress-related factors contributing to the psychosocial impact of psoriasis: stress associated with anticipation of the reaction, avoidance by others, and stress associated with patients' experience or beliefs about being evaluated exclusively on the basis of their skin.<sup>53</sup> So, stress is largely secondary to the cosmetic disfigurement associated with psoriasis, with great impact on quality of life and possibly resulting in psychological morbidity. Stigmatization also causes stress in psoriasis patients. Vardy *et al.*<sup>54</sup> found that psoriasis patients experienced more 'stigma' than other skin problem patients. Stigmatization of the disease in psoriasis patients significantly related to poor social support.<sup>55</sup> It worsens their quality of life and at times leads to depression. Psychological disturbances, including the perception of stigmatization, are stronger determinants of disability in psoriasis patients than are disease severity, location, and duration.<sup>56</sup> Psoriasis negatively impact physical, emotional, social, sexual, professional and financial well-being.<sup>57,58</sup> Rapp *et al.*<sup>59</sup> found that in patients with psoriasis the impaired physical and mental functioning was comparable to that seen in cancer, arthritis, hypertension, heart disease, diabetes, and depression. Scharloo *et al.*<sup>60</sup> concluded that perceptions of psoriasis as a severe illness were associated with a greater frequency of medical consultations and poorer quality of life in terms of physical health, social functioning, and mental health. Other risk factors for mental illness in psoriasis patients have a high burden of symptoms, strong beliefs about the consequences of the disease, little use of positive coping strategies and substance abuse.<sup>61,62</sup>

Although we found overall significantly higher psychiatric morbidity in patients with psoriasis (in terms of both General Health Questionnaire-60 and MINI), but the individual diagnosis made

by MINI (elements of MINI) was not significantly different in both groups, probably the data were not sufficient to elicit the difference.

Significant positive correlation was found between psoriasis skin lesions and anxiety and depression. Few studies also reported correlation between Psoriasis severity and depression.<sup>5,63</sup> Significant positive correlation was found between acne severity and anxiety. Similarly Ozturk *et al.*<sup>46</sup> concluded that social anxiety levels of severe acne cases were significantly higher and a few studies found a positive relationship between severity of acne and severity of anxiety and depression.<sup>64,65</sup>

In present study, psoriasis patients had significantly higher psychiatric morbidity in comparison to acne. Psoriasis and acne severity positively correlated with anxiety and depression. So, identification and treatment of comorbid psychiatric conditions play an important role for efficient management of such conditions. This was the cross-sectional, hospital-based study, in which sample size was modest, so authors recommended further studies with large sample size.

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