

Psychiatric Co-Morbidity and Quality of Life in Patients with Psoriasis in a Tertiary Care Hospital

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ABSTRACT

Background: Psoriasis is a chronic, dermatological disorder prone to relapses has adverse consequences on social, occupational, and other areas of functioning. **Aim:** To study the Psychiatric co-morbidity and social quality of life in psoriasis patients and compare them with controls. **Method:** This cross-sectional, case control study included 123 psoriasis patients and 123 matched healthy controls. All subjects were assessed with the Mini International Neuropsychiatric Interview, the Depression Anxiety Stress Scale, Psoriasis Life Stress Inventory (PLSI) and Psoriasis Area Severity Index (PASI). The data was analyzed using statistical software. **Results:** Prevalence of psychiatric disorders was 79% in psoriasis cases and 19% in controls. Depression was found in around 50%, anxiety in 56% and stress in 34% of cases. Depression was significantly higher among psoriasis patients. Depression was more prevalent in older age and in females whereas anxiety in younger age. PLSI was found to be high in 56% of cases and higher scores were found more in older age group. Older people had higher mean PASI score. Comparing PASI scores, people who have more depression, anxiety or higher PLSI scores, have higher PASI scores. **Conclusion:** Psoriasis is associated with high prevalence of co-morbid psychiatric disorders. In addition, they have higher levels of depressed and anxious mood. Patients of psoriasis and others will benefit from knowledge about the nature of the disease.

Key Words: Psoriasis; psychiatric morbidity, anxiety, depression, stress, quality of life

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Introduction

A healthy skin is not only essential for external appearance but for self-image and self-esteem and causes emotional distress when it is disfigured [1]. Psoriasis is a chronic, disfiguring, non-contagious inflammatory dermatological disorder prevalent in 0.6%–4.8% of general population [2]. Psoriasis is recognized as Type I or early onset (<40 years) psoriasis with a greater genetic vulnerability; and Type II or late onset (>40 years) psoriasis susceptible to environmental factors [3]. Psoriasis affects both genders equally. Starting at an earlier age has severe and recurrent course. In general, is often accompanied by significant psychological impairment ranging from 21% to 43%, of stigma and poorer

quality of life (QOL) [4,5]. Almost 50% of Psoriatics have feelings of helplessness and loneliness, also associated with psychiatric co-morbidities, including depression, anxiety, and suicidality [6,7]. The psychiatric co-morbidities are likely to be caused by factors like stress, discomfort, and possible disfigurement secondary to psoriasis, as well as social factors [8,9]. The pathogenesis of psychiatric comorbidities in psoriasis is under active investigation. One theory involves pro-inflammatory cytokines, that may disrupt serotonin metabolism, thus leading to the psychiatric co-morbidities seen in psoriasis patients [7]. In addition, psychological stress disturbs the epidermal permeability barrier homeostasis, thus precipitating psoriasis [1]. Psoriasis also affects social interactions, sexual functioning. Sexual dysfunction in turn

causes significant distress and negatively impacts the QOL [7,1]. Several factors, including emotional stress, play a role in either causing or aggravating psoriasis and does impact the treatment outcome.

The effect of psoriasis on the QOL is comparable to that of other chronic disorders [9]. Many patients see their disease as a curse experience feeling of guilt constantly worried about peoples' perceptions of them, costly and time-consuming treatments make them to stay away from social rejection and shame. Some are often distressed even after their skin lesions have resolved. Physicians often ignorant of the degree of psychological disability and fewer than 33% receive mental health care. Most of the studies have examined psychiatric symptoms than psychiatric disorders [9-11]. In view of the sparse Indian work on this issue, the current controlled study was carried out to evaluate the Psychiatric co-morbidities and QOL in Psoriasis patients.

Materials and Methods

This cross-sectional, case-control study was undertaken at the Departments of Psychiatry and Dermatology of a tertiary care hospital and research Centre, during Sep 2018 - Aug 2020. Permission to undertake the study was taken from the Institute Ethics Committee (IEC) before starting the study.

Sample

Patients with a definite dermatological diagnosis of psoriasis were taken in the study group by purposive sampling. The control group included equal number of sex and age matched normal controls.

Inclusion Criteria

Patients attending Dermatology Outpatient Department with diagnosis of Psoriasis. Patients above the age of 18 years

Exclusion Criteria

Known cases of head injury or mental retardation. Known history of a chronic medical condition.

Tools

Socio-Demographic Questionnaire

This self-made questionnaire was used to record demographic and illness related variables.

Psoriasis Life Stress Inventory (PLSI)

The PLSI is used to rate Psoriasis related stress. Subjects were interviewed with a list of 15 questions which they have experienced over past one month. They rated the degree of stress associated with each item on a scale of 0-3. A PLSI score of ≥ 10 (Range 0-43) delineated patients with significantly greater overall Psoriasis severity, Cronbach's

alpha for the PLSI was 0.90 [12].

Depression Anxiety Stress Scale (DASS) - 21

DASS - 21 assesses depression, anxiety and stress, each with 7 item self-report scales. Cronbach's alpha of total scale is 0.93. Cronbach's alphas of for depression, anxiety, and stress sub-scales are 0.88, 0.82, and 0.90 respectively [13].

Psoriasis Area Severity Index (PASI)

The body is divided into four sections head (10% of a person's skin); arms (20%); trunk (30%); legs (40%). Each of these areas is scored by itself, and then the four scores are combined into the final PASI [14].

The Mini International Neuropsychiatric Interview (MINI)

The MINI is a brief structured psychiatric diagnostic interview [15]. All the mean alpha scores are at acceptable levels. The Cronbach's alpha value for the autism scale is highest while obsessive-compulsive disorder has the lowest score [16].

Procedure

The participants were explained the aim and procedure of the study after which written informed consent was taken. After filling the sociodemographic proforma patients were interviewed and examined. All subjects were assessed with socio demographic proforma, MINI and DASS-21. Psoriasis patients were also subjected to PLSI and PASI.

Statistical Analysis

The data was analyzed using SPSS-20(IBM Chicago USA) and appropriate statistical tests.

Results

Table 1, reflects sociodemographic characteristics of the cases and control groups. Psychiatric disorders were observed in 78.86% of psoriasis patients and 18.7% of controls. The difference was statistically significant. (Chi Square= 89.094; $p < 0.00001$). Among Psoriasis patients major depressive disorder followed by anxiety and alcohol dependence were most prevalent. (Fig. 1). Psoriasis patients obtained significantly higher scores on Depression, Anxiety and Stress subscales of DASS-21 and the PLSI (Table 1 and 2). Comparison of psychiatric disorders, levels of depression, anxiety, stress and PLSI and PASI scores in Type 1 and Type 2 Psoriasis is given in Table 3. Association of psychiatric disorders, levels of depression, anxiety, stress and PLSI and PASI scores in male and female patients with Psoriasis is given in Table 4. Association of PASI scores with depression, anxiety and PLSI is depicted in Table 5.

A multiple linear regression was performed with depression

Table 1: Demographic characteristics, comorbid psychiatric disorders and scores on the depression, anxiety and stress scale in Psoriasis patients (n=123) and matched normal controls (n=123)

		Psoriasis patients N	Normal Controls N	p-value		
Age distribution	20-30	31	34	0.685		
	31-40	51	46			
	41-50	25	25			
	51-60	8	13			
	61-70	8	5			
Sex distribution	Male	72	69	0.699		
	Female	51	54			
Socio-economic status	Upper	13	20	0.263		
	Middle	60	63			
	Lower	50	40			
Domicile	Urban	83	78	0.503		
	Rural	40	45			
Psychiatric disorders	Present	97	23	0.00001		
	Not Present	26	100			
Comorbid Psychiatric disorders (by MINI)	MDD	58	8			
	Suicidality	8	0			
	Manic/Hypomanic Episode	8	0			
	Psychotic Disorder	21	0			
	GAD	37	3			
	Social Anxiety	35	0			
	Panic	16	2			
	Agarophobia	10	0			
	OCD	6	0			
	PTSD	3	0			
	Alcohol	32	9			
	Other Substances	5	5			
	Mean (SD)		Mean (SD)		Mean (SD)	
	Depression, Anxiety, Stress scale 21	Depression	9.06 (5.65)		2.34 (2.88)	0.000
		Anxiety	6.99 (3.69)		1.61 (2.19)	0.000
	Stress	11.28 (5.59)	3.38 (3.57)	0.000		

MW test: Mann Whitney U test, Chi square statistics

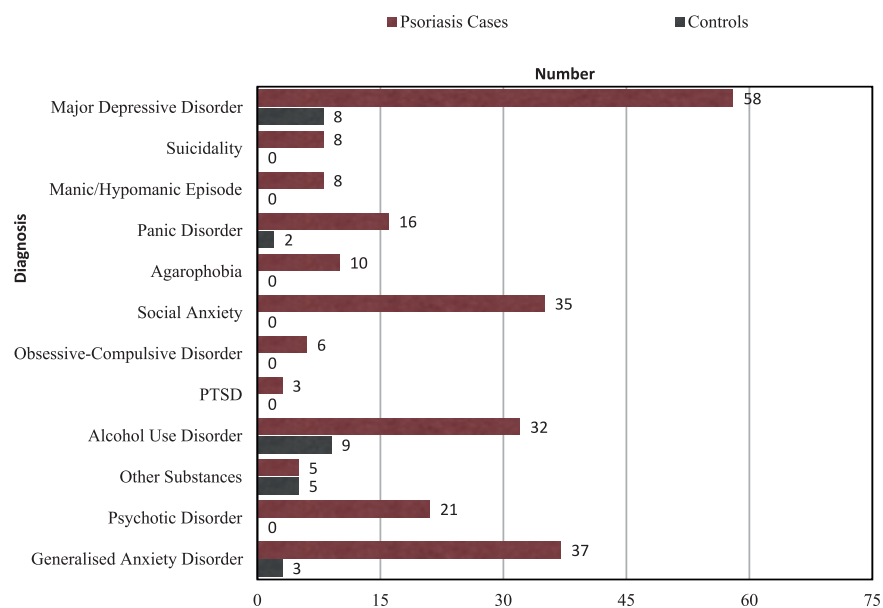


Fig. 1: A stacked bar graph showing prevalence of different psychiatric disorders in patients with Psoriasis and controls subjects

Table 2: Comparison of levels of depression, anxiety, stress and Psoriasis life stress inventory in psoriasis patients and control subjects.

Variables		Psoriasis Cases	Controls	P value
DASS-21 Depression	Normal	62	115	0.00
	Mild	39	8	
	Moderate	16	0	
	Severe	6	0	
	Total (% having depression)	61 (49.59%)	8 (6.5%)	
DASS-21 Anxiety	Normal	54	119	0.00
	Mild	41	2	
	Moderate	24	2	
	Severe	4	0	
	Total (% having anxiety)	69 (56.1%)	4 (3.25%)	
DASS-21 Stress	Normal	82	123(100%)	0.00
	Mild	35	0	
	Moderate	6	0	
	Severe	0	0	
	Total (% having stress)	41 (33.34%)	0 (0%)	
PLSI	Low	54(43.9%)	123(100%)	0.00
	High	69(56.1%)	0 (0%)	

PLSI- P: Psoriasis life stress inventory; Fisher exact test

Table 3: Comparison of psychiatric disorders, levels of depression, anxiety, stress and Psoriasis life stress inventory and PASI scores in Type 1 and Type 2 Psoriasis

Variables		Type of Psoriasis	p-value	
		Type-1 (<=40) (n=96)	Type-2 (>40) (n=27)	
Psychiatric disorders	Present	70(72.92%)	20(74.07)	0.905*
	Not Present	26(27.08%)	7(25.93)	
Depression	Present	43(44.79%)	18(66.67%)	0.044*
	Not Present	53	9	
Anxiety	Present	59(61.46)	10(37.04)	0.023*
	Not Present	37(38.54)	17 (62.96)	
Stress	Present	31(32.29%)	10(37.04%)	0.644*
	Not Present	65	17	
PLSI	High	49(51.04)	20(74.07)	0.033*
	Low	47(48.96)	7(25.93)	
PASI Score	Mean Score	6.70	8.05	0.001**

PLSI- P: Psoriasis life stress inventory; PASI: Psoriasis Area Severity Index; *Chi square statistics, ** MW test: Mann Whitney U test

Table 4: Association of psychiatric disorders, levels of depression, anxiety, stress and Psoriasis life stress inventory and Psoriasis Area Severity Index scores in male and female patients with Psoriasis

Variables		Male (n=72)	Female (n=51)	p-value
Psychiatric illness	Present	56(77.78%)	40(78.43%)	0.931*
	Not Present	16	11	
Depression	Present	30 (41.67%)	31(60.78%)	0.036*
	Not Present	42	20	
Anxiety	Present	39(54.17%)	30(58.82%)	0.608*
	Not Present	33	21	
Stress	Present	24	17	1.000*
	Not Present	48	34	
PLSI	High	38(52.78%)	31(60.78%)	0.378*
	Low	34	20	
PASI score	Mean	7.01	6.98	0.272**

PLSI- P: Psoriasis life stress inventory; PASI: Psoriasis Area Severity Index; *Chi square statistics, ** MW test: Mann Whitney U test

Table 5: Association of Psoriasis Area Severity Index scores with depression, anxiety and Psoriasis Life stress

Variables		Mean PASI	p*
Depression	Not having depression (n=62)	6.33	0.000
	Having depression (n=61)	7.68	
Anxiety	Not Having Anxiety (n=54)	6.49	0.003
	Having Anxiety (n=69)	7.397	
PLSI	Low PLSI (n=54)	6.42	0.001
	High PLSI (n=69)	7.45	

PLSI: Psoriasis life stress inventory; PASI: Psoriasis Area Severity Index;* Mann-Whitney U value

Table 6: Multiple regression analysis for predictors of depression: Coefficients (a)

Model 1	Unstandardized coefficients		Standardized coefficients	p value
	B	Std. error	Beta	
(Constant)	-3.077	1.294		0.019
Anxiety	0.191	0.130	0.121	0.144
Stress	0.519	0.073	0.510	0.000
PASI	0.106	0.206	0.030	0.609
PLSI	0.429	0.116	0.288	0.000

a. Dependent Variable: Depression;

PLSI- P: Psoriasis life stress inventory; PASI: Psoriasis Area Severity Index

as dependent variable and PLSI, PASI, stress and anxiety as predictor variables. The adjusted R^2 of our model is 0.692, $R^2 = 0.702$ and the Durbin-Watson $d = 2.136$. The multiple linear regression's F-test is highly significant ($F(4, 118) = 69.522$; $P < 0.000$). The significant predictors of depression were stress and PLSI scores (Table 6).

Discussion

There were 58.54% males and 41.46% females in the cases and controls who were matched according to age, sex, socio-economic background and their place of residence. This almost equal division among males and females helped us to establish an accurate comparison and results considering various modalities unlike in the study by Singh *et al* [17], where there were three times the number of males as compared to the females. Most of the subjects were from lower to middle socio-economic class from urban background. Major depression, followed by anxiety disorders and alcohol use disorder were the common comorbid psychiatric disorders. In the controls group also, the prevalence was highest for major depression, anxiety disorders and alcohol use disorder. With increasing depression among patients, the rate of suicidality also rises. In this study the rate of suicidality was 6.5% which is consistent with the rate of 2.5-9.7% found in other studies [1,18].

Alcohol is known to affect immunity by stimulating keratinocyte proliferation, which is secreted in skin. It also increases the rate of mechanical trauma and infection, which exacerbates psoriasis [19]. Also, people who suffer from

psoriasis, fall back upon drinking to relieve their stress and anxiety. Thus, alcohol forms a vicious cycle, increased alcohol consumption leads to psoriasis which in turn leads to excessive alcohol consumption. The finding of significantly higher prevalence of psychiatric disorders in psoriasis patients is in agreement with an earlier Indian study which reported that 84% of psoriasis cases and 32% of controls had psychiatric illness [20]. As opposed to our findings Singh *et al.* [17], reported only 47% psychiatric morbidity in psoriasis patients. The disparity in the results may be due to the fact that the latter study had almost 3 times the number of males than females unlike in our study which had almost equal number of males and females. The Type of psoriasis was then compared amongst the cases with total psychiatric comorbidity. We found that be it any age group, psychiatric co morbidities are almost found equal; around 73-74% in both the age groups. Thus, we found that there is no significant difference between the two types.

No major studies were found which compared the differences among all these co-relates between males and females and thus it was included in this study. Psychiatric illness in total among males and females suffering from psoriasis, was found to be almost similar, i.e., 77-78%. This shows that just like age, there is no disparity in the prevalence of psychiatric illness among males and females. This finding can be explained by the fact that substance abuse especially alcohol, which is one of the main factors causing psoriasis, is found mostly among males while depression and anxiety is more in females, due to higher concern for appearance as compared to males.

Depression was seen in 49% of people suffering from psoriasis which agrees with other studies where the prevalence is between 10-62% [21]. From Multiple linear regression analysis, we found that stress and PLSI are predictors of depression. This correlation was not studied widely and hence it gives us a new insight in the understanding of the problem. Among those suffering from depression, the prevalence of mild, moderate and severe depression was 63.93%, 26.23% and 9.8% respectively. Similarly, Kumar *et al* [21]. found the prevalence of mild, moderate and severe depression to be 68%, 18%, and 4% respectively. The present study also shows that chronic low-grade depression is more common than major depression, and mental healthcare workers should play an integral role in treatment planning and psychosocial intervention in such patients as also discussed in a study by Singh *et al* [17]. Certain inflammatory mediators, like tumour necrosis factor- α and interferon γ which are involved in the pathogenesis of both depression and psoriasis, probably leads to an increased rates of depression in patients with psoriasis [22,23].

Similarly, anxiety was found in 56% of cases, but only 3% of controls. Among those suffering from anxiety, 59.42% had mild anxiety, 34.78% had moderate anxiety and 5.79% had severe anxiety. These findings are also in line with Kumar *et al* [20]. who found the prevalence of mild, moderate and severe depression to be 52%, 36% and 12% respectively. Stress was present in 33% of cases but not in any of the controls. The prevalence of stress is seen to be low as compared to depression and anxiety.

An important finding was that the mean scores of depressions, anxiety and stress was significantly lower for controls than cases. Similarly, Kurd *et al* [24] mentioned that there is a significant difference among depression, anxiety and sexual dysfunction in comparison to healthy controls.

A significant difference in depression scores also was found between the two types of psoriasis, The prevalence of depression among type-1 patients was 45% versus 67% among type-2 psoriasis patients. This finding agrees with the findings of Kotrulja *et al* [25]. This indicates that people with type-1 psoriasis who have an early age of onset are likely to have less stress and depression related to psoriasis as compared to older people with late age of onset. The reason for the above finding is thought to be that younger people with earlier age of onset, are likely to adjust to the change easily and get used to live with the condition as compared to the older people who are not able to accept the change and are not adept to newer methods to cope with the stress as compared to younger people. Also, it had been shown in various studies that the symptom severity is also high in people with type-2 psoriasis which further leads to higher amounts of stress and depression [25].

The prevalence of anxiety in type-1 patients was 61% compared to 37% in type-2. The difference was statistically significant. When considering anxiety, we found that people of young age group experienced more anxiety as compared to older people, possibly because of the reason that they are more concerned about their appearance as compared to older people and many of them are working which exposes them to the social stigma associated with a chronic dermatological illness, in turn causing anxiety and shame.

Considering the prevalence of major depression in males (42%) and females (61%), we find a significant difference between the two groups, indicating that females who have psoriasis experience more amount of stress and are more depressed possibly due to their higher concern for appearance. Other major factor causing higher rates of depression in females is higher prevalence of females for sexual dysfunction as compared to males. Risk of sexual dysfunction in psoriasis patients was correlated with female sex, advancing age, involvement of joints or genitalia, comorbid psychiatric disorders, as well as hypertension and hyperlipidemia [26,27]. Having psoriasis causes more worry and depression, which in turn adversely affects the skin condition, thereby causing further worry or depression.

In the case of anxiety, it was found that females showed higher rates of anxiety, but the difference is not significant. This implies that males are equally conscious about their appearance as females. This may also be because of the fact that males have higher rate of substance abuse which is a causative factor both for psoriasis and anxiety [5].

To assess the stress related specifically with psoriasis and also the disturbance in QOL, we used the PLSI. We found out that 56% of cases had high levels of stress related to psoriasis and their QOL was affected. Kotrulja *et al* [25] found that 82% of patients with psoriasis had high PLSI scores. The PLSI should be applied as early as possible and those with high PLSI score should be screened for any psychological symptoms [25].

The PLSI scores were high in 51% of people with Type-1 psoriasis compared to 74% of people with Type-2 psoriasis. The difference was statistically significant. We can conclude that people with type-1 psoriasis have less stress related to psoriasis as compared to people with type-2 psoriasis. Though Kotrulja *et al* [25] reported that 75% of Type-1 psoriasis patients and 92% of Type-2 psoriasis patients showed high score, but the differences was not statistically significant. High PLSI scores in females (61%) was not significantly different as compared to 53% in males. This shows that both males and females experience almost similar stress related to psoriasis and it affects the QOL in both the genders.

As regards the impact of psoriasis on the social QOL it was

found that patients with type-2 psoriasis had a significantly higher mean PASI score than those with type-1 psoriasis, which is in agreement with Kotrulja et al [26]. In comparison between males and females, PASI score were not significantly different which is in agreement with an earlier study [17].

To evaluate the impact of the severity of psoriasis and the body surface area covered on depression, anxiety and stress associated with the disease, PASI score was compared with all the three modalities. It was seen that mean PASI score was significantly higher in those having depression, indicating that more body surface area coverage and more severe disease, leads to higher chances of depression. As opposed to this Goyal et al [28], failed to find a difference between the two groups. Just like in depression, the mean PASI score was also higher in those having anxiety. This in agreement with the findings of Goyal et al [28]. This can be because the extent of lesion in body results in increased concern in a patient about their physical appearance which might cause social embarrassment [29]. Lastly, we find that mean PASI score is significantly higher in those having 'high' PASI score, which signifies that people experience higher amount of stress related to psoriasis and also feeling more of a social misfit and avoiding social situations and interactions, in turn leading to more deterioration in the social QOL. This finding correlates with the findings of previous studies [29,30]. Thus by using PASI, it was seen that even in mild to moderate psoriasis, significant number of patients had psychiatric morbidity which warranted intervention. Similar findings were reported by Singh et al [17]. However, few other studies were not able to find a correlation between extent of lesion and severity of psychosocial stress [30].

Limitations

The study was undertaken in an urban tertiary care urban centre. The results may not be generalized to the whole population. The study was conducted on a population consisting of majority of people from lower to middle strata, with very few people from higher strata and thus the result may be biased.

Conclusion

There is a significantly higher prevalence of psychiatric comorbidities in patients with psoriasis as compared to normal control subjects, depression, anxiety and alcohol abuse being the most common. Both males and females are equally distressed by the psoriatic lesions, but elder people were found to be suffering more. Physicians should be more vigilant for the possibility of psychiatric disorders in such patients.

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