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Review Article

# Psychocutaneous manifestation in psoriasis

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ABSTRACT

Psoriasis is a chronic hyperproliferative condition of the epidermis which requires systemic therapy. Anxiety, depression, poor self-esteem, alcoholism, sexual dysfunction, suicidal ideation are the commonest psychological problems encountered in psoriasis. Quality of life may be severely affected by the chronic nature of the psoriasis as well as the need of life long treatment. In general, psychological factors include poor self-esteem, stigmatization, depression and anxiety which are the strong determinants which determine the disability in psoriasis more than the disease itself. This is a review article highlighting on the psychological aspects of psoriasis.

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## 1. Introduction

Psoriasis is an autoimmune mediated genetically determined common dermatological disorder which affects the skin, joints and has numerous systemic manifestation. Quality of life in psoriasis is affected and patients includes social activity, home life and emotional domain of life. Kurd et al[1] has found suicidability, depression, anxiety associated with psoriasis. The commonest disorders associated with psoriasis are depression, anxiety, psychosis and cognitive impairment.

## 2. Depression

Kumar et al[2] reported 90% was the highest percentage of depression. Dowlat et al has reported high prevalence of depressive mood in psoriasis ranging from 6% to 78%. 1L – 1, 1L - 16 are elevated in psoriasis and depression, indicating the inflammatory process may be contributing to account of psychological morbidities rather than psychological effects of psoriasis. Danish national cohort study, that the incidence rate of depression in severe psoriasis cases was significantly greater than in patients with mild psoriasis (Jonsen et al[3] 2016) cytokines like IL 6, IL-17, TNF - $\alpha$ were reported raised in patients with psoriasis.

Dermorhan et al[4] 2012 Bongueon and Misery 2013 has reported manic episodes in few cases of psoriasis. MRI studies have shown low level of activity in insular cortex of patients in psoriasis.

## 3. Anxiety

Considering anxiety the prevalence rate was reported as 7-48%. Severe psoriasis is associated with higher risk than mild psoriasis.

## 4. Psychosis

Is a comorbid disorder in psoriasis was reported in case report studies by shiva kumar et al[5] 2016. Psoriasis was associated with family history of schizophrenia and non-affective psychosis (Eaton et al[6 7] 2010, Bensors et al 2014.

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## 5. Psoriasis and Depression

Incidence levels of anxiety, suicide risk, and depression was estimated by Kurd et al (2010). Depression in psoriasis is associated with 30% higher incidence of proinflammatory cytokines like 1L-1, TNF $\alpha$ and C-reactive protein which affect the metabolism like dopamine, serotonin and glutamate and serotonin resulting in neurotoxicity and neuronal apoptosis immune cell migration may be pointed by ICAM-1, IL-6 and 1L-11, depression and anxiety affected patients show high level of cytokines, TH17 and 1L-17A . Psoriasis treatment may improve depression, and treating depression may improve psoriatic symptoms.

## 6. Psoriasis and Stress

Immune system is weakened by stress and proinflammatory cytokines are increased. Two neurotransmitters are generally associated with stress and psoriasis. Decreased levels of 5 hydroxytryptamine levels are increased in inflammatory mediators such as TNF- $\alpha$ and 1L-1B, which induces the activation and deterioration of keratinocyctes via NF- KB which is activated by IL-17A in prefrontal cortex and in the hippocampus. Dopamine might be considered as a risk factor for psoriasis leading to release of proinflammatory cytokines. Damage associated molecular patterns stimulate innate immune cells to produce IL -6 and TNF- $\alpha$ and to recruit increasing number of monocytes that begin to circulate in blood circulation . Amine section by sympathetic nervous system leads to proliferation of myeloid cells.

## 7. Psoriasis and Dementia

Psoriasis is a chronic inflammatory skin disease associated with psychosomatic and neurological disorder including dementia. Vasculopathy associated with psoriasis, including arterial stiffness and impaired endothelial function, may predispose to vascular dementia. Oxidative stress in psoriasis and proinflammatory cytokines, may impair neurogenesis and synaptic plasticity leading to neurodegeneration causing cognitive decline.

## 8. Cognitive Impairment

Cognitive functions are crucial for percieving and judging, there is information processing, learning production of language and executive function. Visuospatial working memory and attention is reduced in psoriasis Gisondi el al[8] 2014; Sarkar et al,[9] 2014; Different parts of prefrontal cortex is involved in psoriasis Neuroimaging of individual with psoriasis has found significant decline in cortical thickness. Marek – Jose fowicez et al[10] 2017 found out that cognitive impairment was correlated with neither severity nor the duration of last exacerbation of the disease. High possibility of dementia was associated with cognitive dysfunction in the future. The correlation between psoriasis and dementia was controversial.

## 9. Personality Triats

Psoriasis patients were characterized by certain personality types like dependent, avoidant, compulsive and schizoid by Rubino and Zanna et al[11] 1996. In another study done by Mazzethi et al,[10] 1994 schizophrenia trial and anxious personality was commonly found. Alexithemia is a term which describes deficiency in understanding and describing and processing emotions (sifnen 1973). Three dimensions of alexithemia are difficulties in identifying and describing feelings and impairment of externally oriented thinking. Crosta et al,[12] 2014 has found high prevalence of Alexithemia which was reported in psoriasis. The common personality traits associated with psoriasis is somatic trait, psychiatric trait, embitterment, mistrust stress susceptibility trait, verbal trial aggressive trait.

## 10. Sexual D ysfuntion

Sexual desire is decreased in psoriasis. Psoriasis is associated with erectile dysfunction, orgasmic disorder. Molina leyva et al,[13] Gupta and gupta 1997 et al[14] have reported increase in joint involvement and presence of psychiatric morbidities like depression, hypertension and hyperlipidemia were correlated with sexual dysfunction with psoriasis. Molina levya et al, 2015 have reported higher rate of unprotected sex, and lower age of first sexual intercourse in psoriasis.

## 11. Sleep Disorders

Gowda et al, 2010 have reported nocturnal and early morning awakenings and day time sleepiness and comorbid condition like obstructive sleep apnea syndrome in psoriasis has prevalence of 36-81.8%.

## 12. Alcohol and Smoking Misuse

Patients with psoriasis are more prone to consume alcohol. Psoriatic patients use alcohol as copying up strategies to control stress associated with chronic health condition. Severity of psoriasis is associated with increased in alcohol consumptions.

Smoking is a well-recognized risk factor for developing psoriatic arthritis, a comorbidity that affects 20% of patients with psoriasis.

## 13. Eating Disorders

Studies have found the correlative between psoriasis and eating disorders. Obesity is more prevalent in psoriasis than in general population. Recurrent episodes of eating large amounts of food is called binge eating disorder associated with psoriasis.

**Table 1:** Preclinical studies on relevant shared mechanisms of chronic skin inflammatory diseases and depression and / or anxiety in animal models.

| Authors (year of publication) | Animal model | Behavioral features | Behavioral tests | Biological indices | Pharmacological probe out comes | Mechanisms outlined | Comparison with human skin disorder |
|---|---|---|---|---|---|---|---|
| JiaWen et al. (2017) | K5. Stat3C mice, TPA – treated to induce psoriasis | Depression / anxiety - like behaviors | FST, OFT, and EPM | BDNF and TrkB mRNA in prefrontal cortex and hippocampus. | The SSRI fluoxetine: 1. Increased expression of BDNF and TrkB; 2. The TrkN antagonist K252a reversed all these effects. | BDNF/TrkB signalling may participate in the mechanism of depression and anxiety behaviours in Ps. | In Ps patients, plasma BDNF concentration is decreased. |
| Nadeem et al. (2017) | IMQ psoriasis – like skin inflammation in mouse | Depressive symptoms | TST, FST, sucrose preference test | Phosphorylated NFkB p65 subunit and p38 MAPK in different brain regions. | IMQ treatment led to increased expression of IL17A in innate and adaptive immune cells in different brains regions (mainly hippocampus and prefrontal cortex). | Systemic IL-17A induce depression in the brain of mice. Activation of NF KB and TRB can lead to IL -17 induced depression. | In psoriasis patients IL-17 levels are increased. IL-17 may be responsible for depression in psoriasis. |

**Table 2:** Populationbased studies mentioning the association between psoriasis and psychosis.

| Study | Purpose | Reported association between psoriasis and psychosis |
|---|---|---|
| Eaton et al (2006) | To investigate the prevalence of autoimmune disorders in schizophrenia patients and their parents | Psoriasis prevalence was 0.03% among schizophrenia cases vs 0.02% in a controls. Psoriasis had a significantly higher prevalence among parents of patients compared to parents of comparison individuals (IRR (95% CI:2.0 (1..2-3.2) |
| Eaton et al (2010) | To determine the risk of schizophrenia, non-affective psychosis. | Risk of psoriasis was 1.2 fold greater among the parents or sibling of both schizophrenia and nonaffective psychosis. Psoriasis was significantly associated with an increased risk of schizophrenia. |
| Chen et al (2012) | To assess the relationship between schizophrenia and autoimmune diseases. | In schizophrenia the prevalence rate of psoriasis was 5.180% compared to 3.5045 in the control group. Psoriasis was more prevalent in males than females. |
| Kumar et al (2013) | To examine the prevalence of psychiatric comorbidities in patients with pemphigus and psoriasis | In 3.3 % psoriasis patients paranoid schizophrenia and delusional disorders are commonly seen. |
| Matusiewicz et al (2014) | To explore the epidemiology, treatment, and comorbidities of juvenile psoriasis | In 1.1% psoriasis patients were associated with delusional disorders. |

### *13.1. Various indices associated with psychiatric morbidity in psoriasis*

DLQI is the most frequently used instrumentation in the studies of dermatology to access the quality of life. DLQI questionnaire comprises of 10 questions concerning patients perception of impact of skin disease on their heath related quality of life over last week is assessed. Patients assess the burden of the conditions and clinicians evaluate and monitor the treatment efficacy and psychological burden.

## 14. Psoriasis Disability Index

This is a self-explanatory questionnaire are to assess disability in patients with psoriasis.

### *14.1. Generalized anxiety disorder questionnaires – 7 (GAD 7)3*

This seven item questionnaire was developed to screen patients for anxiety and rate the severity of anxiety. 4 point scale for severity of symptoms score of 5, 10, 15 are taken as the cut off for mild, moderate and severe anxiety respectively.

### *14.2. Multi-dimensional aspect of percieved social suport scale*

This is a social support scale comprising of 12 times that are divided into three subscales on the source of support. Each group consists of 4 items. These are family domain, friend's domain and spinal person domain stems are noted on 7-point scale. Definitely yes or definitely no are the two options.

## 15. Patient Health Questionnaire

This is a brief self-administered depression scale that evaluates each of nine criteria of the diagnostic and statistical manual.

Each rated from 0-3.

## 16. Internalized Stigma of Mental Illness (ISMI) S cale

ISMI scales is an interview based instrument to assess self-stigma / internalized stigma. It comprises of 29 questions, with point rating scale. The various items of the scale are grouped under 4 dimensions: alienation, stereotype, endorsement, Perceived discrimination. Social withdrawal and stigma resistance basically reflex the ability of the person to fight back. Accordingly, higher stigma resistance indicates higher ability to withstand the pressure of stigma. Calculation of weighted score is done.

## 17. Conclusion

There is a high prevalence of different psychiatric and neurological disorders reported in psoriasis cases. Psychiatric disorder associated with psychosocial burden of chronic skin diseases may impair the response to outcome of the treatment and the disease process itself which may worsen mental symptoms, thus contributing to undermine the patients quality of life. More emphasis should be made on studies which are centered on psychological evaluation done by clinician rated instruments and by patients themselves which includes stigma, cognitive functioning, coping up strategies.

Regular treatment of skin under proper supervision clubbed with climate therapy and nutrition monitoring with psychological intervention helps in coping up with disease with respect to psychological and social consequences of psoriasis.

Finally, an integrated approach is necessary between dermatologist and psychiatrist to identify mental health disorders at earlier stage to provide quality health care and reduce the financial burden of mental health disorders to the society, care givers and researchers.

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## 19. Conflict of Interest

None declared.

## References

1. Kurd SK, Troxel AB, Christoph PC, Gelfand JM. The risk of depression, anxiety, and suicidality in patients with psoriasis: a population-based cohort study. *Arch Dermatol*. 2010;146(8):891–5. doi:10.1001/archdermatol.2010.186.
2. Kumar S, Kachhawha, Koolwal GD, Gehlot S, Awasthi A. Psychiatric morbidity in psoriasis patients: a pilot study. *Indian J Dermatol Venereol Leprol*. 2011;77(5):625. doi:10.4103/0378-6323.84074.
3. Dowlatshahi EA, Wakkee M, Arends LR, Nijsten T. The prevalence and odds of depressive symptoms and clinical depression in psoriasis patients: a systematic review and meta-analysis. *J Invest Dermatol*. 2014;134(6):1542–51. doi:10.1038/jid.2013.508.
4. Egeberg A, Khalid U, Gislason GH, Mallbris L, Skov L, Hansen PR, et al. Psoriasis and sleep apnea: a Danish nationwide cohort study. *J Clin Sleep Med*. 2016;12(5):663–71. doi:10.5664/jcsm.5790.
5. Shivakumar V, Agarwal SM, Bose A, Kandasamy A, Roa NP, Narayanaswamy JC, et al. Safety of Transcranial Direct Current Stimulation in Alcohol-Induced Psychotic Disorder with Comorbid Psoriasis. *Indian J Psychol Med*. 2016;38(1):71–3. doi:10.4103/0253-7176.175128.
6. Maj M, Stein DJ, Parker G, Zimmerman M, Fava GA, De Hert M, et al. The clinical characterization of the adult patient with depression aimed at personalization of management. *World Psychiatry*. 2020;19(3):269–93. doi:10.1002/wps.20771.
7. Eaton WW, Pedersen MG, Nielsen PR, Mortensen PB. Autoimmune diseases, bipolar disorder, and non-affective psychosis. *Bipolar Disord*. 2010;12(6):638–46. doi:10.1111/j.1399-5618.2010.00853.x.
8. Sarkar S, Sarkar A, Saha R, Sarkar T. Psoriasis and psychiatric morbidity: a profile from tertiary care centre of Eastern India. *J Family Med Prim Care*. 2014;3(1):29–32. doi:10.4103/2249-4863.130267.

9. Gupta MA, Simpson FC, Gupta AK. Psoriasis and sleep disorders: a systematic review. *Sleep Med Rev*. 2016;29:63–75. doi:10.1016/j.smrv.2015.09.003.
10. Mazzetti M, Mozzetta A, Soavi GC, Andreoli E, Foiglio BP, Puddu P, et al. Psoriasis, stress and psychiatry: psychodynamic characteristics of stressors. *Acta Derm Venereol Suppl (Stockh)*. 1994;186:62–4.
11. Rubino I, Zanna V. Further comments on psoriasis and personality disorders. *Psychol Rep*. 1996;79(3 Pt 2):1248–50. doi:10.2466/pr0.1996.79.3f.1248.
12. Crosta ML, Caldarola G, Fraietta S, Craba A, Benedetti C, Coco V, et al. Psychopathology and eating disorders in patients with psoriasis. *G Ital Dermatol Venereol*. 2014;149(3):355–61.
13. Molina-Leyva A, Jimenex-Moleon JJ, Naranjo-Sintes R, Ruiz-Carrascosa JC. Sexual dysfunction in psoriasis: a systematic review. *J Eur Acad Dermatol Venereol*. 2015;29(4):649–55. doi:10.1111/jdv.12845.
14. Gupta M, Gupta AK. Psoriasis and sex: a study of moderately to severely affected patients. *Int J Dermatol*. 1997;36(4):259–62. doi:10.1046/j.1365-4362.1997.00032.x.

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