



Original Research Article

Prevalence of stress, anxiety and depression in patients of Acne vulgaris

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ABSTRACT

Introduction: 30-60% patients with skin disorder estimated to have psychiatry comorbidity. Acne vulgaris (AV) is a chronic inflammatory disease of the pilosebaceous follicles with global prevalence around 70-80%.

Aim: To assess stress, anxiety and depression in patients of acne and their correlation with acne severity.

Materials and Methods: Patients who received diagnoses of acne vulgaris from Dermatology OPD and willing to participate in study were included. Acne severity was assessed using Global Acne Grading System. (GAGS). Patients were assessed for psychiatry morbidity using Hindi version of Depression Anxiety Stress Scale- 21 item (DASS 21). Statistical analysis was done by SPSS version 20.0.

Results: Out of 46 patients included in study, 23 (50%) patients reported having mild stress, 7 (15.2%) had moderate and 2 (4.3%) had severe stress. 14 (26.1%) patients reported having mild anxiety and 8 (21.7%) had moderate anxiety. Depression was found in 9 (19.5%) patients as 7 (15.2%) had mild and 2 (4.3%) had moderate depression. As per GAGS, 19 patients had mild acne, 16 had moderate, 8 had severe and 3 had very severe acne.

Discussion: Significantly high proportion of patients with acne had stress, anxiety and depression and psychiatry morbidity significantly associated with acne severity. Anxiety and depression were also correlated significantly with acne duration.

Conclusion: The relationship between stress, psychiatry morbidity and acne are worth exploring as possible behaviour intervention can be useful in patients.

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1. Introduction

Skin, apart from being the largest organ of body, also play a pivotal role in social communication throughout life. In a current era of social media, external appearance of an individual has become a major factor in one's life. Skin Disorders which are visible have profound impact on the psyche of persons who are affected with it. Skin condition can lead to emotional problems like poor self-image, shame and low self-esteem.

Psychiatry is more focused on internal nonvisible disease and Dermatology is focused on external visible disease. Psychodermatology is a complex interplay between

mind (psyche) and skin. The brain and the skin develop from the embryonic ectoderm and are influenced by the same hormones and neurotransmitters, resulting in a close relationship between them.¹ Relationship between skin and psyche can be explained by Biopsychosocial model of dermatology and Psycho-neuroimmuno-endocrine-cutaneous model by O'sullivan et al.² Biopsychosocial model explains multifactorial nature of skin disease in which biological, environmental, psychological and interpersonal factors affects both severity of skin disease and impact of disease in one's life. Psychocutaneous illnesses are divided in three main categories by Biopsychosocial model. First category in which skin condition is primary of psychiatric origin like dermatitis artefacta, trichotillomania and delusional parasitosis. Second category in which

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skin condition like psoriasis, acne, vitiligo, atopic dermatitis, are of multifactorial basis and course of which is subject to psychiatric influences. In third category, there are secondary psychiatric disorders like anxiety, phobia, depression, adjustment problem due to serious or disfiguring skin condition.³ Psycho-neuro-immuno-endocrine-cutaneous model explains the mind and body relationship, in which it describes the relationship of stress, immune system, environmental factors and skin disorders

It is estimated that 30-60% of patients with skin disorder have psychiatry comorbidities. Mostly skin conditions which are associated with psychiatry comorbidities are chronic disfiguring and having visible sign and symptoms. It includes psoriasis, atopic dermatitis, vitiligo, pigmentation disorders, acne, alopecia, lupus erythematosus, leprosy, and sexually transmitted infections.³⁻⁵ Psychological impact depends upon a number of factors, including the natural history of the disease in question; the patient's demographic characteristics, personality traits, and life situation; and the meaning of the disease in the patient's family and culture.⁶

Acne vulgaris (AV) is a chronic inflammatory disease of the pilosebaceous follicles, characterized by comedones, papules, pustules, nodules, and often scars.⁷ It usually starts in adolescence and frequently resolves by the mid-twenties.⁸ The estimated overall prevalence of AV around the world is 70-80% and is 56% among adolescents in the age group of 14-16 years.^{8,9} Acne in adolescents can be a concern as it can have a negative effect on persons' self-evaluation, interpersonal relationship and daily performance.¹⁰ 50% of patients with acne vulgaris have reported stress, which can be due to external and individual factors which are interconnected.^{1,11} Apart from stress, studies have reported anxiety (44%), depression (18%), acute suicidal ideation (6%), body dysmorphic disorder (8%), impaired self-esteem, anger and permanent effects on personality in patients of AV.^{8,11-13} In an Indian study by Bondade et al,¹ psychiatry morbidity was found to be 40% with depressive disorder in 34% and anxiety in 6% of AV patients. Another study from India by Srivatsava et al, has reported clinically significant depression in 39.1% and anxiety in 4.35% of AV patients.¹⁴ Lacunae of study regarding psychiatry morbidity in acne vulgaris from our region prompted us to carry out the study.

2. Aim

1. To study socio demographic profile of patients with acne vulgaris
2. To assess severity of acne vulgaris
3. To assess stress, anxiety and depression in patients with acne vulgaris
4. To assess correlation between severity of acne and stress, depression and anxiety

3. Materials and Methods

This was a cross sectional study carried out at tertiary care hospital in north Gujarat region. Patients were recruited from Dermatology OPD. Approval was taken beforehand from Ethical committee of medical college. Patients were initially assessed by Dermatologist. Patients of acne vulgaris were explained regarding purpose of study. Patients who were above age of 15 and willing to take part in study were included in study. Formal written consent was taken from patients. Patients were assessed using semi structured Performa which included socio demographical details like age, sex, marital status, education, religion etc. Severity was assessed by dermatologist using The Global Acne Grading system (GAGS) and then patients were assessed for stress, anxiety and Depression using Depression, Anxiety and stress scale- 21 item scale. (DASS 21)

The Global Acne Grading system

In 1997, Doshi, Zaheer and Stiller¹⁵ devised a global acne grading system (GAGS). This system divides the face, chest and back into six areas (forehead, each cheek, nose, chin and chest and back) and assigns a factor to each area on the basis of size. For forehead, right cheek and left cheek 2 factor are assigned, for nose and chin 1 factor and for chest and upper back 3 factors are assigned. Each type of lesion is given a value depending on severity: no lesions = 0, comedones = 1, papules = 2, pustules = 3 and nodules = 4. The score for each area (Local score) is calculated using the formula: Local score = Factor × Grade (0-4). The global score is the sum of local scores, and acne severity was graded using the global score. A score of 1-18 is considered mild; 19-30, moderate; 31-38, severe; and >39, very severe.

Depression using Depression, Anxiety and stress scale-21 item (DASS-21)

Depression Anxiety Stress Scale (DASS)-21: The DASS-21 is based on three subscales of depression, stress, and anxiety and each subscale consists of seven questions each.¹⁶ Both English and non-English versions have high internal consistency (Cronbach's alpha scores >0.7). Hindi version of scale which was translated and validated by Bhupendra Singh et al was used in study.¹⁷ Patients were explained by psychiatric social worker regarding nature of questionnaire and were given separate space to fill up the scale. The emotional states of psychological stress, depression and anxiety were calculated summing up each question in DASS-21 rate how the individual was feeling in the last week. The scores for each set of DASS-21 contains 7 questions for the 3 subscales scored on a Likert four points (0, 1, 2 and 3) ranging from 0 (Never) to 3 (Almost always) were calculated separately to get a score for depression, anxiety and stress other than depression and anxiety. These four answers for level of severity or frequency of psychological stresses were analyzed based on DASS-21 scoring guidelines in which depression scores are categorized as normal (0-4), mild (5-6), moderate (7-

10), severe (11-13), and extremely severe (14 and above); Anxiety scores are categorized as normal (0-3), mild (4-5), moderate (6-7), severe (8-9) and extremely severe (10 and above); Stress scores are categorized as normal (0-7), mild (8-9), moderate (10-12), severe (13-16) and extremely severe (17 and above).

Statistical Analysis

All data collected was logged and keyed in Microsoft Excel and was analyzed using IBM Statistical Product and Service Solutions (SPSS) version 20.0 Continuous data was expressed in mean (standard deviation) and categorical data was expressed in number (percentage). To assess correlation between variable, chi square was used. $P < 0.05$ was considered to be significant.

4. Results

Out of 46 patients included in study, 29 (63%) were male and 17 (27%) were female with mean age of 20 years. 37 (80.4%) subjects were unmarried and only 9 (19.6%) were married. Majority of subjects followed Hindu religion with 39 (84.8%) and Muslim were 6(13). Mean score of Acne severity on GAGS was 22.89 (9.36). As per GAGS, 19 subjects had mild acne, 16 had moderate, 8 had severe and 3 had very severe acne. Mean score of stress, anxiety and depression was 8.28, 3.76 and 3.94 correspondingly. 23 subjects reported having mild stress, 7 had moderate and 2 had severe stress. 14 subjects reported having mild anxiety and 8 had moderate anxiety. Depression was found in 9 subjects as 7 had mild and 2 had moderate depression. Acne severity was found to be significantly associated with stress, anxiety and depression. Duration of acne vulgaris was found to be significantly associated with anxiety and depression. Subjects age, sex, religion, marital status, education or occupation, were not significantly associated with acne severity, stress, anxiety or depression.

5. Discussion

Acne Vulgaris is a common skin condition in adolescents and young adult population and during this phase of life people undergo various physical, social and mental changes. This study was conducted to find out stress, anxiety and depression in people with Acne Vulgaris and their association with severity of acne.

5.1. Stress

Stress is an abnormal or extreme physiological adjustment to adverse effect of environment. State of stress is affected by both external and individual factors which are interconnected. In our study, 69.56% patients have shown that they feel mild to severe level of stress. A study by Bondade et al, has reported significantly higher proportion of undesirable stressful life events in patients of acne vulgaris than normal control.¹ In our study, stress

severity was significantly correlated with increase acne severity grade of GAGS. Patients who had higher acne grade on GAGS had significantly higher stress score on DASS 21. Similar results were seen in a study involving 144 female medical students from Jeddah, Saudi Arabia by Shadi Zari et al, in which also stress was seen positively correlated with acne severity.¹⁸ Several other studies have reported similar finding of strong association between higher acne severity with higher stress level.^{19,20} There are number of mechanism by which stress can worsen or aggravate acne. Stress causes activation of Hypothalamic pituitary adrenal axis (HPA Axis) which causes increased level of Corticotropin releasing hormone (CRH) and cortisol. CRH stimulates sebaceous gland lipid production and steroidogenesis, which contribute to acne.²¹⁻²³ The upregulation of CRH expression in acne involved skin may influence the inflammatory process that lead to stress induced acne lesion.²⁴ In adult women with acne, chronic stress increases the secretion of adrenal androgens and results in sebaceous hyperplasia.²⁵ Substance P which is released in response to stress from peripheral nerve, also stimulates proliferation and differentiation of sebaceous gland.^{26,27} As stress affects wound healing by 40% can also affect acne repair.^{28,29}

5.2. Anxiety and Depression

In our study, 47.82% patients of Acne Vulgaris have shown mild to moderate level of anxiety and 19.56% patients had depression ranging from mild to moderate level on DASS 21. Anxiety and depression were significantly correlated with acne severity which infers that patients having higher acne severity on GAGS had higher anxiety and depression scores on DASS 21. In contrast to our study, bondade et al reported 34% depression and 6% anxiety disorder in patients of acne vulgaris.¹ Similar findings were reported in another Indian study by Srivatsava et al, where depression was present at 39.1% and anxiety was in 4.35%.¹⁴ A study from Iran by Golchai et al have reported anxiety at 68.3% and depression at 25.6% in patients of acne vulgaris which is somewhat similar to our study.³⁰ Similarly, a Turkish study by Ozturk et al also reported higher level of anxiety than depression in patients of acne.³¹

In our study acne severity was significantly correlated with anxiety and depression score. A study by Erdemir et al also reported similar findings.³² A study by Mishra et al and several other studies also have reported positive correlation between acne severity and depression.^{8,33-36} However some other studies have found no relation with acne severity and depression in past.³⁷

In present study, significant correlation was found between duration of acne and anxiety and depression. A similar finding has been reported previously which suggested that the presence of long-term disease results in an increased risk of scarring and disproportionate

Table 1: Socio- demographic details of patients of Acne vulgaris

No.	Variables	Number(%) or mean (sd)	Total number - 46
1	Age		20.04(3.65)
2	Sex	Male	29 (63%)
		Female	17 (37%)
3	Marital Status	Unmarried	37 (80.4%)
		Married	9 (19.6%)
4	Religion	Hindu	39 (84.8%)
		Muslim	6 (13%)
		Others	1 (2.2%)
5	Education	Uneducated	1 (2.2%)
		Schooling (primary, secondary)	32 (69.6%)
		Graduate	13 (28.3%)
6	Occupation	Employed	9 (19.6%)
		Housework	4 (8.7%)
		Student	33 (71.7%)

Table 2: Clinical details

No	Variables	Number(%) or mean (sd)	Mean score (sd)
1	Global acne score	Mild Moderate Severe Very severe	19 (41.3%) 16 (34.8%) 8 (17.4%) 3 (6.5%)
			22.89 (9.36)
2	Stress	Normal Mild Moderate Severe	14 (30.4%) 23 (50%) 7 (15.2%) 2 (4.3%)
			8.28 (2.5)
3	Anxiety	Extreme Normal Mild Moderate Severe	0 24 (52.2%) 14 (26.1%) 8 (21.7%) 0
			3.76 (1.52)
4	Depression	Extreme Normal Mild Moderate Severe	0 37 (80.4%) 7 (15.2%) 2 (4.3%) 0
			3.94 (1.76)
5	Duration of illness(months)	Extreme	0
			5.63 (9.35)

Table 3: Correlation between acne severity and stress

Variables	Global Acne severity				Chi square	df	P value
Stress	Mild	moderate	Severe	Very severe			
Normal	14	0	0	0	14 (30.4%)		
Mild	5	15	3	0	23 (50%)	74.70	P < 0.0001
Moderate	0	1	5	1	7 (15.2%)		
Severe	0	0	0	2	2 (4.3%)		
	19(41.3%)	16(34.8%)	8(17.4%)	3(6.5%)	46		

Table 4: Correlation between acne severity and anxiety

Variables	Global Acne severity				Chi square	df	P value	
	mild	moderate	Severe	Very severe				
Anxiety								
Normal	15	9	0	0	24 (52.2%)	27.34	6	P=0.0001
Mild	4	6	3	1	14 (30.4%)			
Moderate	0	1	5	2	8 (17.4%)			
	19(41.3%)	16(34.8%)	8(17.4%)	3(6.5%)	46			

Table 5: Correlation between acne severity and Depression

Variables	Global Acne severity				Chi square	df	P value	
	mild	moderate	Severe	Very severe				
Depression								
Normal	18	14	4	1	37 (80.4%)	15.21	6	P=0.018
Mild	0	2	3	2	7(15.2%)			
Moderate	1	0	1	0	2(4.3%)			
	19(41.3%)	16(34.8%)	8(17.4%)	3(6.5%)	46			

psychological distress.^{8,38} Acne severity, stress, anxiety and depression were found to have no significant correlation with age, gender, education and religion. Some past studies also denied any significance difference between two gender and depression.^{8,33} Some studies have found that depression negatively correlates with level of education, which suggest that severity of depression decreases with increasing level of education.⁸

There were several limitations of our study as it was a cross sectional study with small sample size. This was a liaison work between dermatology and psychiatry department. Apart from that self-reported scale was used to assess psychiatry morbidity in patients of AV instead of psychiatry interview and structured diagnostic instruments which would have provided more validation.

6. Conclusion

There is higher proportion of stress, anxiety and depression in patients of Acne Vulgaris and which significantly correlates with acne severity and duration of acne. Ultimately the relationship between stress, psychiatry morbidity and acne are worth exploring as possible behaviour intervention can be useful in patients. Stress management, relaxation therapy and appropriate treatment of psychiatry comorbidity in patients of acne is need of the hour. A prospective longitudinal study with large sample size would be ideal to know relationship between psychiatry morbidity and course of acne.

7. Source of Funding

None.

8. Conflict of Interest

None.

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