

Psychological Distress among Patients with Acne Vulgaris: A Cross-Sectional Study from a Tertiary Care Hospital in Southern Rajasthan

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Abstract

Background: Acne vulgaris is a chronic inflammatory disorder of the pilosebaceous units that causes comedones, inflammatory follicular papules, pustules, and nodular cystic lesions in the sebaceous areas of the skin of the face and trunk. Approximately 9.4% of the world's population is estimated to be affected by acne, ranking it as the eighth most common disease on a global scale.

Aims and objectives: This study aimed to assess psychological distress (depression, anxiety, and stress) among patients with acne vulgaris attending a tertiary care hospital, evaluate associated sociodemographic and clinical variables, assess acne severity using the Global Acne Grading Scale (GAGS), and determine its association with psychological distress measured by the Depression, Anxiety and Stress Scale (DASS-21) scale.

Materials and methods: A cross-sectional study was conducted over 6 months in the dermatology outpatient department of a tertiary healthcare center in Southern Rajasthan on 84 patients with acne vulgaris. The participants were selected using simple random sampling. Data were collected using a sociodemographic and clinical proforma, the Global Acne Grading Scale (GAGS), and the Hindi-validated version of the Depression, Anxiety and Stress Scale (DASS-21).

Results: The mean age of the patients was 28.80 (± 4.21) years. The study sample was predominantly male, unmarried, and Hindu, with most participants being educated and students or never employed. Most patients had mild-to-moderate acne, with no instances of very severe acne vulgaris. A positive family history was observed in 14% of the participants. Both acne duration and severity showed a positive but statistically non-significant correlation with psychological distress.

Conclusion: This study highlights the importance of routine comprehensive clinical assessments in patients with acne vulgaris. Consultation and liaison between dermatologists and psychiatrists are warranted to improve treatment outcomes.

INTRODUCTION

Acne vulgaris (AV) is a chronic inflammatory disorder of the pilosebaceous unit, characterized by comedones, inflammatory papules, pustules, and nodulocystic lesions, predominantly involving the face and trunk.^[1] It affects approximately 9.4% of the global population, making it the eighth most prevalent disease worldwide.^[2] Acne is considered a psychosomatic disorder that

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affects both physical appearance and psychological well-being.^[3] Disease severity varies from mild to very severe, based on the lesion type and number.

Psychiatric comorbidities are reported in 30 to 60% of patients with dermatological disorders, and 30–50% of adolescents with acne experience anxiety or depression.^[3] However, limited data are available on the psychosocial burden of acne in adults. Stress is reported in nearly 50% of patients with AV, influenced by both individual and environmental factors.^[4] Studies have documented anxiety (44%), depression (18%), suicidal ideation (6%), body dysmorphic disorder (8%), low self-esteem, and long-term personality changes among patients with acne.^[3,5-7] The Global Burden of Disease Study 2010 ranked acne as the eighth most prevalent disease worldwide.^[8]

Indian studies have reported high psychiatric morbidity in patients with AV, with Bondade *et al.* noting depressive disorders in 34% and anxiety in 6%,^[4] while Srivastava *et al.* reported clinically significant depression in 39.1% and anxiety in 4.35% of patients.^[9] Psychological stress is known to exacerbate acne by altering immune and cutaneous barrier functions, thereby creating a vicious cycle between acne severity and emotional distress.^[10-13] Female patients have shown higher levels of depression and anxiety, with significant correlations between acne severity, duration, and psychological morbidity.^[14-18]

Despite the growing evidence linking acne vulgaris with psychological distress, region-specific data, particularly from tertiary care settings, remain limited. Most available studies focus predominantly on adolescents, with inadequate evaluation of sociodemographic and clinical correlates and the relationship between acne severity and psychological morbidity. Therefore, the present study aimed to assess the magnitude of psychological distress, specifically depression, anxiety, and stress, among patients with acne vulgaris attending a tertiary care hospital. This study also aimed to evaluate the associated sociodemographic and clinical variables and examine the relationship between the severity of acne vulgaris and psychological distress, thereby contributing to a more comprehensive and holistic

approach to patient management. The aims and objectives of the current study were to determine the socio-demographic and clinical variables, identify the measures of psychological distress (depression, anxiety, and stress), and determine the associations of the severity of AV with the duration of AV and Psychological distress among patients with AV at a tertiary care hospital.

MATERIALS AND METHODS

This cross-sectional study was conducted in the Department of Dermatology of a tertiary care teaching hospital in Southern Rajasthan, India, over a period of 6 months from August 2024 to January 2025. Ethical approval was obtained from the Institutional Ethics Committee (Approval No.: AIMS/Ananta IEC/2024/311), and written informed consent was obtained from all participants prior to enrollment. Patients diagnosed with acne vulgaris attending the outpatient or inpatient services were screened for eligibility. Individuals aged ≥ 17 years, of either sex, who were treatment-naïve or had not received any treatment for at least 1 month and were able to read or understand Hindi were included in the study. Patients with coexisting dermatological conditions causing visible skin lesions, physical disability or amputation, or a prior diagnosis of psychiatric illness (including depressive disorders, anxiety disorders, or substance use disorders) were excluded. The sample size was calculated based on the proportion of acne severity reported in a previous study, with a 5% alpha error, using Epi Info version 7.2. Using Cochran's formula, the estimated sample size for an infinite population was 196; after applying the finite population correction for the study duration, the minimum required sample size was 77. Considering a 10% attrition rate, a total of 84 participants were included in the study using consecutive sampling.

Instruments

A semi-structured proforma on sociodemographic variables (including age, sex, religion, marital status, domicile, education, and employment status) and clinical variables (including family history, duration of acne, and severity of acne vulgaris using the Global Acne Grading Scale (GAGS)^[20] was used. The GAGS

considers six areas of the face, chest, and upper back based on the level of involvement, distribution, density, and pilosebaceous units. Each of these areas was scored on a scale of 0–4. Subsequently, the score of each region was multiplied by the factor score. The factor score differed based on the involved area: forehead, 2; left and right cheek, 2; nose, 1; chin, 1; and chest and upper back, 3. Therefore, the total score was obtained by multiplying the factor score by the total score of the involved area. The severity of AV is inferred from the following GAGS score. Mild AV for scores 1 to 18, moderate AV for scores 19 to 30, severe AV for scores 31 to 38, and very severe AV if the score is more than 39.

The Depression, Anxiety, and Stress Scale-21 (DASS-21)^[21] is a validated tool and a set of three self-report scales designed to measure the emotional states of depression, anxiety, and stress in a wide range of diseases. The Hindi-translated and validated version of this scale was used in the study.^[22] The depression component of this scale evaluates devaluation of life, inertia, self-depreciation, anhedonia, hopelessness, lack of interest/involvement, and dysphoria. The anxiety component of this scale evaluates situational anxiety, skeletal muscle effects, autonomic arousal, and subjective experience of anxious affect. The stress component of this scale is sensitive to levels of chronic nonspecific arousal. It evaluates the difficulty in nervous arousal and relaxation, being easily irritable/overreactive, upset/agitated, and impatient. The final score of each item group needs to be multiplied by 2. The depression scale quantifies depression as per score (mild 10–13, moderate 14–20, severe 21–27, extremely severe 28+), anxiety as per score (mild 8–9, moderate 10–14, severe 15–19, extremely severe 20+), and stress as per score (mild 15–18, moderate 19–25, severe 26–33, extremely severe 34+).

Study procedure: The participants were explained the purpose of the study, and written informed consent was obtained (in the case of minors, consent from parents or legal guardians was obtained), following which an assessment was carried out using the instruments: semi-structured proforma on sociodemographic variables, semi-structured proforma on clinical variables, and DASS-21 scale.

Data Analysis

The Quantitative and qualitative variables were summarized using descriptive statistics. Pearson's correlation test was used to determine the relationship between psychological distress and the severity and duration of acne vulgaris. Data were analyzed using SPSS version 22.0 (SPSS Inc., Chicago, IL, USA). The results were considered statistically significant at $p < 0.05$.

RESULTS

The mean age of the sample was 28.80 (SD 4.21) years. The mean AV duration was 11.13 months (SD-10.15).

Table 1 summarizes the sociodemographic profiles of the study participants. The sample was predominantly young, unmarried, and urban, with a slight male predominance. Most participants belonged to the Hindu religion and had attained at least secondary-level education, with over half being graduates. A substantial proportion were students, and only a small fraction were engaged in full-time or part-time employment. A family history of acne vulgaris was reported in a minority of the participants.

Table 2 presents the distribution of depression, anxiety, and stress severity, as assessed by the DASS. Overall, most participants had normal to mild levels of depression and stress, whereas anxiety levels were comparatively higher, with a considerable proportion of participants demonstrating moderate to severe symptoms.

Table 3 shows the distribution of acne vulgaris (AV) severity among the study participants. The majority of participants had mild acne vulgaris (59.5%), followed by moderate acne vulgaris (32.14%). Severe acne vulgaris was observed in a smaller proportion of participants (8.33%), and no cases of very severe acne vulgaris were reported in the study population.

Table 4 shows that both the duration and severity of AV correlated positively with psychological distress, but the results were not statistically significant.

DISCUSSION

In our study, males constituted the majority, which is similar to previous Indian studies^[23,24] but differs

Table 1: Distribution of sociodemographic and clinical variables of the patients with acne vulgaris

Variables	Number (N)	Percentage (%)
Sex		
Male	51	60.71
Female	33	39.28
Age (years)		
Up to 20	28	33.33
21-25	40	47.6
26-40	16	19.04
Religion		
Hindu	81	96.4
Muslim	3	3.6
Marital status		
Married	11	13.09
Unmarried	73	86.9
Domicile		
Rural	19	22.61
Urban	47	55.95
Semi urban	18	21.4
Education		
Literate	3	3.57
Primary	2	2.38
Secondary	30	35.7
Graduates	46	54.7
Post- graduate	3	3.57
Employment status		
Never employed	27	32.5
Presently employed	1	1.2
Full time employed	12	14.5
Part time employed	02	1.2
Student	40	48.2
Homemaker	02	2.4
Family history of AV		
Positive	12	14.28
Negative	72	85.71

Table 2: Distribution of depression, anxiety and stress among patients with acne vulgaris

DASS-21	Number of Participants (N= 84)		
	Depression (N)	Anxiety (N)	Stress (N)
Normal	32	19	76
Mild	34	15	6
Moderate	18	37	1
Severe	0	10	1
Extremely severe	0	3	0

from Western literature, where females were often more affected, possibly due to hormonal influences and cosmetic-related consultations.^{25,26} The finding of the most affected age group in our study is con-

Table 3: Distribution of participants as per severity of acne vulgaris (AV)

Severity of AV	Total Participants (N)	Percentage (%)
Mild AV	50	59.5%
Moderate AV	27	32.14%
Severe AV	7	8.33%
Very Severe AV	00	-

Table 4: Correlation between psychological distress with duration and severity of acne vulgaris (AV)

Variables	Correlation coefficient (r value)
Duration of AV versus Total DASS score	0.548
Severity of AV versus Total DASS score	0.48

sistent with other Indian.^{27,28} and global studies^{29,30} showing peak prevalence in late adolescence and persistence into adulthood. The predominance of Urban Hindus reflects regional demographics, while a high proportion of unmarried individuals reflects that acne is more common in younger populations.^[28] Furthermore, more than half of the participants were graduates and students, comparable to Indian and international reports, indicating that acne frequently affects young adults, particularly students.^[2,28] Regarding disease severity, most patients in the present study had mild acne vulgaris, followed by moderate and severe forms. This distribution is consistent with the findings reported in previous Indian studies,^[2,24,28] as well as in the global literature.^[25,29] This indicates that mild-to-moderate AV constitutes the majority of clinical cases, whereas very severe forms are relatively uncommon.

Mean duration of AV in our sample was 11.13 months, which is comparable to the study by Ahmed *et al.*^[31] Majority of our participants reported moderate anxiety and mild depression, while no stress, which is in line with the studies such as by Khan *et al.*^[32] and Garg *et al.*^[28] where anxiety and depression were more prevalent than stress among acne patients. Duration of AV correlated positively with the psychological distress, but it was not statistically significant, which is in line with the findings by Yousef BE *et al.*^[33] while in contrast to Indian studies, such as Khan *et al.*^[32] and Dogra *et al.*^[34] have

reported longer duration being statistically significantly associated with higher psychological distress.

The severity of AV correlated positively with psychological distress, but it was not statistically significant, which is in line with the findings of a Turkish study by Karaağaç M *et al.*^[35] while in contrast to Garg *et al.*^[28] This can be due to the fact that the majority of our sample constituted mild AV, while in their samples, it was severe. The presence of AV produces psychological distress among patients and may influence their psychosocial and academic functioning.

Beyond objective clinical parameters, the psychological impact of acne vulgaris is strongly shaped by patients' subjective perceptions of the illness. Perceived severity, visibility of facial lesions, and fear of negative social evaluation often exert a greater influence on emotional well-being than clinician-rated severity. This may explain the presence of significant anxiety and depressive symptoms, even among patients with mild-to-moderate acne in the present study. Cultural expectations regarding appearance, increased self-consciousness, and peer comparisons during young adulthood may further intensify psychological distress, particularly in academic and social settings.

The relationship between acne and psychological distress is bidirectional. Psychological stress can activate the hypothalamic–pituitary–adrenal axis, leading to increased release of corticotropin-releasing hormone and pro-inflammatory mediators within the skin, thereby aggravating sebaceous gland activity and inflammation.

Conversely, chronic or recurrent acne can perpetuate stress, anxiety, and depressive symptoms, creating a self-reinforcing cycle. This psychoneuro-immunological interaction underscores the importance of early recognition and management of psychological distress to prevent the worsening of both dermatological and mental health outcomes.

From a clinical perspective, these findings highlight the need for routine mental health screening in patients with acne vulgaris. Brief, validated instruments such as the DASS-21 can be feasibly incorporated into dermatology outpatient settings to identify individuals at risk of psychological disorders. An integrated dermatology–psychiatry or

consultation–liaison approach may facilitate timely psychoeducation, stress management strategies, and referral to mental health professionals when indicated. Addressing psychological distress as an integral component of acne management is likely to improve treatment adherence, patient satisfaction, and the overall quality of life.

Strengths and Limitations

This is the first study in Southern Rajasthan that used validated tools (GAGS and DASS-21). Our study is limited by its cross-sectional, single-center design, absence of a control group, under-representation of severe/very severe AV cases, and reliance on self-reported measures for psychological distress.

Future directions and Implications

Future studies should overcome the limitations of the present work by employing larger, multi-centric, and longitudinal study designs to establish causal relationships between acne vulgaris severity, disease duration, and psychological distress, with adequate inclusion of severe and very severe cases. The integration of objective biological stress markers, such as HPA axis activity and cortisol levels, alongside standardized clinical severity measures, may help elucidate the underlying psychoneuroimmunological pathways. Additionally, research should focus on evaluating integrated dermatology–psychiatry approaches and the routine use of brief, validated screening tools, such as the DASS-21, in dermatology settings to facilitate the early detection of psychological morbidity and improve treatment adherence, patient satisfaction, and overall quality of life.

CONCLUSION

The findings of the current study demonstrate the presence of psychological distress among patients. These observations highlight the importance of integrating mental health screening into dermatological care for the holistic management of patients with AV.

CONFLICTS OF INTEREST

None.

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