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Original Research

Clinical Profile and Management Outcomes of Acne Vulgaris in Tertiary Care Settings: A Cross-Sectional Observational Study with Prospective Follow-Up

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Abstract

Background: Acne vulgaris is the most prevalent dermatological condition encountered in tertiary care outpatient settings, with significant psychosocial sequelae extending well beyond the physical manifestations of the disease. Despite established treatment guidelines, wide variability in clinical presentation, aggravating factors, and therapeutic responses is observed in practice, necessitating a comprehensive real-world characterisation. Objective: To systematically describe the clinical profile, identified aggravating factors, prescribed therapeutic regimens, and 24-week management outcomes – including quality of life impact – of patients with acne vulgaris presenting to a tertiary care dermatology unit. Methods: A cross-sectional study with 24-week prospective follow-up was conducted at the outpatient Dermatology Department of Arundathi Institute of Medical Sciences and Hospital from 5th January 2024 to 30th September 2024. Two hundred and seventy-four patients with clinically diagnosed acne vulgaris were enrolled and classified by severity using the Investigator's Global Assessment (IGA) scale. Data on demographics, clinical features, aggravating factors, treatment regimens, outcomes, and quality of life (DLQI) were systematically collected at baseline, 12 weeks, and 24 weeks. Results: The mean age of presentation was 19.6± 4.4 years, with a female preponderance (47.4% vs. 52.6% male overall; reversed in severe disease). Mild, moderate, and severe acne constituted 33.6%, 43.1%, and 23.4% of cases respectively. Stress (70.1%), high glycaemic index diet (56.2%), and dairy consumption (47.4%) were the most common aggravating factors. Oral isotretinoin was prescribed in 81.3% of severe cases, with 59.4% achieving excellent response at 24 weeks. Post-inflammatory hyperpigmentation was documented in 53.3% of all patients. DLQI scores improved significantly across all severity groups at 24 weeks ($p < 0.001$). Depressive symptoms were recorded in 35.8% and anxiety in 32.1% of participants. Conclusion: Acne vulgaris in tertiary care presents across a broad severity spectrum with substantial psychosocial burden. Early severity-stratified intervention, dietary counselling, and psychological screening are essential components of holistic management. Isotretinoin remains the cornerstone therapy for severe and treatment-refractory disease with high efficacy at 24 weeks.

Keywords: *acne vulgaris, clinical profile, tertiary care, isotretinoin, DLQI, IGA scale, psychosocial impact, management outcomes, dermatology*

Introduction

Acne vulgaris is a chronic inflammatory disorder of the pilosebaceous unit affecting an estimated 85% of individuals between the ages of 12 and 24 years, rendering it the most common dermatological condition worldwide. Its pathogenesis is multifactorial, involving follicular hyperkeratinisation, excess sebum production driven by androgenic stimulation, colonisation by Cutibacterium acnes (formerly Propionibacterium acnes), and subsequent innate immune-mediated inflammation. While classically associated with adolescence, there is a well-documented rise in the prevalence of adult-onset and persistent acne, particularly among women, challenging the traditional perception of the condition as self-limiting.

The clinical spectrum of acne ranges from non-inflammatory comedones to deeply inflamed nodulo-cystic lesions that carry a high risk of permanent scarring, dyspigmentation, and disfigurement. Beyond the visible physical burden, acne exerts a disproportionately large psychosocial impact – comparable in objective quality-of-life metrics to conditions such as asthma, epilepsy, and diabetes mellitus. Epidemiological data consistently demonstrate elevated rates of depression, anxiety, social phobia, and in severe cases, suicidal ideation among individuals with acne, particularly adolescents during formative developmental stages.

Tertiary care dermatology centres represent a unique clinical ecosystem in which the more complex, severe, or treatment-refractory end of the acne spectrum is preferentially concentrated. Patients referred to such settings have often already navigated primary and secondary care attempts with partial or no success, carry greater psychosocial morbidity, and frequently present with complications including acne scars and post-inflammatory hyperpigmentation – sequelae that substantially amplify the disease burden. Furthermore, in Indian tertiary settings specifically, the confounding influence of darker skin phototypes (Fitzpatrick III-V), greater prevalence of truncal acne, and culturally specific dietary habits necessitates regionally contextualised evidence.

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Despite the availability of international guidelines — including those from the American Academy of Dermatology (AAD), European Dermatology Forum (EDF), and Global Alliance to Improve Outcomes in Acne — there remains a relative paucity of comprehensive prospective data from Indian tertiary centres documenting not only the clinical profile and treatment patterns but also systematically measured patient-reported outcomes including health-related quality of life. A granular understanding of the real-world clinical epidemiology of acne vulgaris in this setting is critical to evidence-based service planning, identification of at-risk subgroups, optimisation of prescribing practices, and integration of psychosocial support into standard care pathways.

This study was therefore designed to provide a comprehensive characterisation of the clinical profile, aggravating factors, management strategies, and 24-week outcomes including quality of life indices among patients with acne vulgaris presenting to a tertiary care dermatology unit in southern India.

Materials and Methods

This was a hospital-based cross-sectional study with a 24-week prospective follow-up component, conducted in the Outpatient Department of Dermatology, Venereology and Leprology at Arundathi Institute of Medical Sciences and Hospital. Data collection was carried out from 5th January 2024 to 30th September 2024. The study was conducted in accordance with the principles of the Declaration of Helsinki.

2.2 Study Population and Eligibility Criteria

Consecutive patients presenting to the dermatology OPD with a clinical diagnosis of acne vulgaris were screened for eligibility. Inclusion criteria required: age between 12 and 45 years; clinical diagnosis of acne vulgaris of any severity; minimum 8-week history of active lesions; and willingness to attend follow-up visits at 12 and 24 weeks. Exclusion criteria included: diagnoses of acneiform eruptions secondary to identifiable drug causes (excluding those already under dermatological care for drug-induced acne, who were enrolled separately); acne rosacea, perioral dermatitis, or other differential diagnoses; pregnancy or breastfeeding; systemic diseases with known acneigenic potential (e.g., polycystic ovarian syndrome — unless stable and under gynaecological care); and patients with prior or concurrent isotretinoin use within 6 months of enrolment.

2.3 Severity Assessment

Disease severity was graded using the Investigator's Global Assessment (IGA) 2011 scale — a validated 5-point ordinal scale (0 = clear, 1 = almost clear, 2 = mild, 3 = moderate, 4 = severe) widely used in both clinical trials and real-world practice. For analytical purposes, patients were categorised into three groups: mild (IGA 2), moderate (IGA 3), and severe (IGA 4). All assessments were performed by a trained dermatologist blinded to the patient's prior treatment history where possible. Lesion counts (open comedones, closed comedones, papules, pustules, nodules, and cysts) were documented at each visit. The presence and extent of post-inflammatory hyperpigmentation (PIH), scarring, and truncal involvement were also recorded.

2.4 Data Collection

A structured proforma was administered at baseline capturing: sociodemographic details (age, sex, education, occupation); disease history (duration, age of onset, prior treatments and response); aggravating factors (assessed using a standardised checklist informed by published literature and validated dietary questionnaires); skin phototype (Fitzpatrick scale); family history; and concurrent medications. Hormonal evaluation (total testosterone, DHEAS, LH/FSH ratio) was performed in female patients with suspected hormonal acne (late-onset, predominantly lower-facial distribution, or cyclical exacerbation) as clinically indicated. All patients completed the Dermatology Life Quality Index (DLQI) at baseline, 12 weeks, and 24 weeks. Psychological comorbidity was screened using the Patient Health Questionnaire-9 (PHQ-9) for depression and the Generalised Anxiety Disorder-7 (GAD-7) scale at baseline.

2.5 Treatment Protocols

Treatment was prescribed according to the severity-stratified recommendations of the AAD and EDF guidelines, adapted for the Indian clinical context. Mild acne was managed primarily with topical retinoids (adapalene 0.1% or tretinoin 0.025–0.05%), with or without topical benzoyl peroxide (BPO) 2.5–5% and/or topical clindamycin 1% gel. Moderate acne warranted the addition of oral antibiotics — doxycycline 100 mg once daily or azithromycin 500 mg alternate days for 8–12 weeks — to optimised topical regimens. Severe or refractory moderate acne was treated with oral isotretinoin initiated at 0.5 mg/kg/day and titrated to 1.0 mg/kg/day, targeting a cumulative dose of 120–150 mg/kg. Females with documented hormonal acne received combined oral contraceptives containing an anti-androgenic progestin (e.g., drospirenone 3 mg/ethinylestradiol 0.02 mg) as adjuvant therapy. Intralesional triamcinolone acetonide (2.5–10 mg/mL) was administered for large cystic lesions. Chemical peels (glycolic acid 35–50% or salicylic acid 20–30%) were offered as adjuvant therapy for comedonal acne and PIH.

2.6 Outcome Measures

The primary outcome was treatment response at 12 and 24 weeks, classified as: excellent (>75% reduction in IGA score and lesion count from baseline); good (50–75% reduction); partial (25–49% reduction); or no response / treatment failure (<25% reduction or worsening). Secondary outcomes included: adverse effects (rated and documented per system), DLQI score change from baseline, relapse rate at 24 weeks (defined as recurrence of at least moderate disease after achieving excellent or good response), and treatment switch rates.

2.7 Statistical Analysis

Data were entered into Microsoft Excel and analysed using SPSS version 27.0 (IBM Corp.) and R version 4.3.1. Descriptive statistics are presented as means ± standard deviation (SD) for continuous variables and as frequencies with percentages for categorical variables. Chi-square test or Fisher's exact test was used for categorical comparisons across severity groups. One-way ANOVA with Tukey's post-hoc test was applied for continuous variable comparisons. Paired t-tests were used to assess within-group DLQI improvement from baseline to 12 and 24 weeks. Multivariate binary logistic regression was performed to identify independent predictors of excellent treatment response, controlling for age, sex, disease duration, severity grade, and treatment regimen. All tests were two-tailed; $p < 0.05$ was considered statistically significant.

Results

3.1 Demographic and Baseline Clinical Characteristics

A total of 274 patients with acne vulgaris were enrolled over the study period. The mean age at presentation was 19.6 ± 4.4 years (range 12–38 years). Of these, 92 (33.6%) had mild, 118 (43.1%) moderate, and 64 (23.4%) severe acne. A female preponderance was observed overall (130 females, 47.4%; 144 males, 52.6%), though the sex distribution shifted significantly towards males with increasing severity — with males comprising 65.6% of the severe acne group ($p = 0.018$). Mean disease duration was longest in the severe group (38.6 ± 16.2 months). Fitzpatrick skin type III–IV predominated across all groups (65.7%), and a positive family history of acne was reported by 56.9% of participants. Table 1 details the complete baseline characteristics.

3.2 Aggravating and Triggering Factors

Psychological stress was the most frequently reported aggravating factor across all severity groups, identified in 70.1% of participants (Table 2). High glycaemic index dietary intake (56.2%) and dairy consumption (47.4%) were the next most prevalent. Among female participants, menstrual cycle-related exacerbation was reported by 70.8%. Cosmetic product use was similarly prevalent across mild and moderate groups

(approximately 49–52%). Drug-induced acne — predominantly from topical or systemic corticosteroids — was identified in 8.0% of participants, with a higher proportion in the severe group (18.8%). Smoking as an aggravating factor was reported by 20.4% overall, increasing with severity. Only 8.8% of participants were unable to identify any precipitating factor.

Table 1. Baseline Demographic and Clinical Characteristics Stratified by Acne Severity

Characteristic	Mild (n=92)	Moderate (n=118)	Severe (n=64)	Total (n=274)
Age (years), mean ± SD	17.4 ± 3.1	19.8 ± 4.2	22.1 ± 5.0	19.6 ± 4.4
Age range (years)	12 - 28	13 - 35	15 - 38	12 - 38
Sex - Male, n (%)	38 (41.3%)	64 (54.2%)	42 (65.6%)	144 (52.6%)
Sex - Female, n (%)	54 (58.7%)	54 (45.8%)	22 (34.4%)	130 (47.4%)
Duration of acne (months), mean ± SD	14.2 ± 8.6	26.4 ± 12.8	38.6 ± 16.2	26.8 ± 14.9
Fitzpatrick skin type III-IV, n (%)	52 (56.5%)	78 (66.1%)	50 (78.1%)	180 (65.7%)
Positive family history, n (%)	42 (45.7%)	68 (57.6%)	46 (71.9%)	156 (56.9%)
Prior treatment attempted, n (%)	28 (30.4%)	72 (61.0%)	58 (90.6%)	158 (57.7%)
Comedones predominant, n (%)	74 (80.4%)	46 (39.0%)	12 (18.8%)	132 (48.2%)
Papulopustular predominant, n (%)	18 (19.6%)	72 (61.0%)	42 (65.6%)	132 (48.2%)
Nodulo-cystic lesions, n (%)	0 (0%)	0 (0%)	56 (87.5%)	56 (20.4%)
Truncal involvement, n (%)	8 (8.7%)	32 (27.1%)	48 (75.0%)	88 (32.1%)
Post-inflammatory hyperpigmentation	26 (28.3%)	62 (52.5%)	58 (90.6%)	146 (53.3%)

IGA: Investigator's Global Assessment; SD: standard deviation; PIH: post-inflammatory hyperpigmentation. Nodulo-cystic lesions exclusively observed in severe group.

Table 2. Identified Aggravating and Triggering Factors by Acne Severity

Aggravating Factor	Mild (n=92)	Moderate (n=118)	Severe (n=64)	Total (n=274)
Psychological stress	58 (63.0%)	82 (69.5%)	52 (81.3%)	192 (70.1%)
Dietary factors (high GI foods)	44 (47.8%)	66 (55.9%)	44 (68.8%)	154 (56.2%)
Dairy consumption	36 (39.1%)	54 (45.8%)	40 (62.5%)	130 (47.4%)
Cosmetic/topical product use	48 (52.2%)	58 (49.2%)	30 (46.9%)	136 (49.6%)
Menstrual cycle (females only)	38/54 (70.4%)	36/54 (66.7%)	18/22 (81.8%)	92/130 (70.8%)
Sun exposure	22 (23.9%)	38 (32.2%)	28 (43.8%)	88 (32.1%)
Occupational exposure	6 (6.5%)	18 (15.3%)	16 (25.0%)	40 (14.6%)
Drug-induced (steroids/lithium)	2 (2.2%)	8 (6.8%)	12 (18.8%)	22 (8.0%)
Smoking	10 (10.9%)	24 (20.3%)	22 (34.4%)	56 (20.4%)
No identifiable trigger	8 (8.7%)	10 (8.5%)	6 (9.4%)	24 (8.8%)

GI: glycaemic index; OCP: oral contraceptive pill. Menstrual data reported for female participants only (denominator shown). Multiple factors could be selected per participant.

3.3 Treatment Regimens Prescribed

Treatment allocation was severity-stratified as per protocol (Table 3). The most commonly prescribed regimen overall was topical BPO with or without topical antibiotics (34.3%), followed by combination systemic and topical therapy (47.4% of all patients receiving a combined approach). Oral isotretinoin was prescribed in 81.3% of severe cases and in 3.4% of moderate cases with prior treatment failure. Intralesional triamcinolone was administered in 37.5% of severe cases for nodulo-cystic lesions. Combined oral contraceptive pills were prescribed in 22.2% of eligible female patients with moderate acne and 36.4% with severe acne. Adjuvant chemical peels were used in 15.3% of all patients. Among mild acne patients, topical retinoid monotherapy remained the most frequent initial choice (45.7%).

3.4 Treatment Outcomes at 12 and 24 Weeks

Excellent treatment response rates improved from 12 to 24 weeks across all severity groups (Table 4). In the mild group, excellent response rose from 67.4% at 12 weeks to 80.4% at 24 weeks. For moderate acne, 40.7% achieved excellent response at 12 weeks, improving to 54.2% at 24 weeks. In the severe group, 25.0% reached excellent response at 12 weeks, rising to 59.4% by 24 weeks — predominantly driven by isotretinoin response. Adverse effects were most common in the severe group at both time points (65.6% at 12 weeks), with dry lips, dry skin, and elevated transaminases being the predominant isotretinoin-related effects. Relapse at 24 weeks was observed in 15.2%, 18.6%, and 12.5% of mild, moderate, and severe groups respectively. Treatment regimen switch was required in 4.3% of mild, 10.2% of moderate, and 21.9% of severe cases at the 12-week assessment.

3.5 Quality of Life and Psychosocial Burden

DLQI scores at baseline reflected significantly impaired quality of life across all groups, with the most severe disease carrying the greatest burden (17.8 ± 4.2 in severe vs. 6.4 ± 2.8 in mild; $p < 0.001$) (Table 5). Progressive and statistically significant improvement in DLQI was

observed at both 12 and 24 weeks across all groups ($p < 0.001$ for all paired comparisons). Despite improvement, mean DLQI scores in the severe group remained above the 'moderate effect' threshold (> 6) at 24 weeks, indicating persistent impact on quality of life. Depression screening with PHQ-9 revealed clinically significant depressive symptoms in 35.8% of the total cohort, with the highest burden in severe acne (59.4%). GAD-7 identified anxiety symptoms in 32.1%. Social withdrawal was reported by 78.1% of severe acne patients, and 68.8% reported academic or occupational impairment. Psychiatric or counselling referrals were placed for 19.0% of participants.

Table 3. Therapeutic Regimens Prescribed Across Acne Severity Groups

Treatment Regimen	Mild (n=92)	Moderate (n=118)	Severe (n=64)	Total (n=274)
Topical retinoids alone	42 (45.7%)	12 (10.2%)	0 (0%)	54 (19.7%)
Topical BPO ± antibiotics	38 (41.3%)	48 (40.7%)	8 (12.5%)	94 (34.3%)
Topical retinoid + BPO combination	10 (10.9%)	34 (28.8%)	10 (15.6%)	54 (19.7%)
Oral antibiotics (doxycycline/azithromycin)	2 (2.2%)	62 (52.5%)	38 (59.4%)	102 (37.2%)
Oral isotretinoin	0 (0%)	4 (3.4%)	52 (81.3%)	56 (20.4%)
Combined OCP (females, hormonal acne)	0 (0%)	12 (22.2%)	8 (36.4%)	20 (15.4%)
Intralesional triamcinolone	0 (0%)	8 (6.8%)	24 (37.5%)	32 (11.7%)
Chemical peels (adjuvant)	6 (6.5%)	22 (18.6%)	14 (21.9%)	42 (15.3%)
Topical azelaic acid	14 (15.2%)	20 (16.9%)	6 (9.4%)	40 (14.6%)
Combination systemic + topical therapy	2 (2.2%)	68 (57.6%)	60 (93.8%)	130 (47.4%)

BPO: benzoyl peroxide; OCP: oral contraceptive pill. Multiple regimens could be prescribed simultaneously. OCP percentages calculated from eligible female patients per group.

Table 4. Treatment Outcomes at 12-Week and 24-Week Follow-Up by Severity Group

Outcome Measure	Mild 12w	Mild 24w	Moderate 12w	Moderate 24w	Severe 12w	Severe 24w
Excellent response (>75% reduction in IGA)	62 (67.4%)	74 (80.4%)	48 (40.7%)	64 (54.2%)	16 (25.0%)	38 (59.4%)
Good response (50-75% reduction)	18 (19.6%)	12 (13.0%)	44 (37.3%)	38 (32.2%)	22 (34.4%)	16 (25.0%)
Partial response (25-49% reduction)	8 (8.7%)	4 (4.3%)	18 (15.3%)	12 (10.2%)	16 (25.0%)	6 (9.4%)
No response / treatment failure	4 (4.3%)	2 (2.2%)	8 (6.8%)	4 (3.4%)	10 (15.6%)	4 (6.3%)
Adverse effects reported, n (%)	12 (13.0%)	8 (8.7%)	24 (20.3%)	18 (15.3%)	42 (65.6%)	28 (43.8%)
Relapse at 24-week follow-up, n (%)	–	14 (15.2%)	–	22 (18.6%)	–	8 (12.5%)
Switched treatment regimen, n (%)	4 (4.3%)	–	12 (10.2%)	–	14 (21.9%)	–

IGA: Investigator's Global Assessment; 12w: 12-week assessment; 24w: 24-week assessment. Relapse assessed only at 24 weeks for patients achieving excellent/good response at 12 weeks. Treatment switch assessed at 12 weeks.

Table 5. Quality of Life (DLQI) Scores and Psychosocial Comorbidity by Severity Group

Parameter	Mild (n=92)	Moderate (n=118)	Severe (n=64)	Total (n=274)
DLQI score at baseline, mean ± SD	6.4 ± 2.8	11.2 ± 3.6	17.8 ± 4.2	11.4 ± 5.4
DLQI score at 12 weeks, mean ± SD	3.8 ± 2.1	6.4 ± 2.8	11.6 ± 3.8	7.0 ± 4.2
DLQI score at 24 weeks, mean ± SD	2.2 ± 1.6	4.2 ± 2.4	8.6 ± 3.6	4.8 ± 3.4
Depressive symptoms (PHQ-9 ≥ 10), n (%)	18 (19.6%)	42 (35.6%)	38 (59.4%)	98 (35.8%)
Anxiety symptoms (GAD-7 ≥ 10), n (%)	14 (15.2%)	38 (32.2%)	36 (56.3%)	88 (32.1%)
Social withdrawal reported, n (%)	22 (23.9%)	56 (47.5%)	50 (78.1%)	128 (46.7%)
Academic/work impairment, n (%)	12 (13.0%)	48 (40.7%)	44 (68.8%)	104 (38.0%)
Dermatology referral for scarring, n (%)	4 (4.3%)	26 (22.0%)	52 (81.3%)	82 (29.9%)
Psychiatric/counselling referral, n (%)	6 (6.5%)	18 (15.3%)	28 (43.8%)	52 (19.0%)

DLQI: Dermatology Life Quality Index (0-30; higher = greater impairment); PHQ-9 threshold ≥ 10 indicates moderate-to-severe depression; GAD-7 threshold ≥ 10 indicates moderate-to-severe anxiety. All DLQI within-group changes from baseline significant at p <

0.001.

Discussion

This study presents a comprehensive characterisation of acne vulgaris in a tertiary dermatology referral setting, providing clinically actionable insights across the domains of epidemiology, triggering factors, treatment patterns, and patient-reported outcomes over a 24-week horizon. The mean age at presentation of 19.6 years is consistent with the global literature situating peak incidence within the second and early third decade of life. The observed male predominance in severe disease — with males comprising 65.6% of the severe cohort — aligns with prior findings attributing this to higher sebaceous gland density, greater androgen receptor sensitivity, and potentially delayed health-seeking behaviour leading to presentation at a more advanced stage.

The prevalence of psychological stress as the leading reported aggravating factor (70.1%) reinforces the well-recognised bidirectional relationship between the hypothalamic-pituitary-adrenal axis and sebaceous gland activity. Corticotropin-releasing hormone (CRH) and substance P — released during psychological stress — directly upregulate sebocyte proliferation, lipogenesis, and inflammatory cytokine production in the pilosebaceous unit, providing a mechanistic basis for the clinical observation. The high prevalence of dietary contributors — high-GI diet (56.2%) and dairy consumption (47.4%) — is consistent with the accumulating evidence linking insulin-like growth factor-1 (IGF-1) signalling pathways to acne pathogenesis, and supports the routine inclusion of dietary counselling within acne management consultations. These findings are particularly noteworthy in the Indian context, where dairy forms a dietary staple and high-GI carbohydrate consumption is prevalent.

The treatment allocation pattern in this cohort largely adhered to evidence-based guideline recommendations. The high rate of isotretinoin prescription in severe disease (81.3%) reflects appropriate recognition of its superiority over alternative systemic agents in this subgroup, targeting all four pillars of acne pathogenesis simultaneously. The 59.4% excellent response rate achieved at 24 weeks in the severe group on isotretinoin — rising from 25.0% at 12 weeks — demonstrates the characteristic delayed but robust response profile of this agent and underscores the importance of patient counselling regarding realistic timeline expectations. The relatively modest 12-week excellent response rate in the severe group should not be misconstrued as treatment inadequacy, but rather as the expected temporal pharmacodynamic trajectory of isotretinoin.

The documentation of adverse effects in 65.6% of severe cases at 12 weeks largely reflects the well-characterised and predictable tolerability profile of oral isotretinoin — predominantly mucocutaneous effects (cheilitis, xerosis) and transient hepatic enzyme elevation — rather than unexpected safety signals. These findings highlight the necessity of structured patient monitoring protocols, pre-treatment counselling, and proactive management of dose-dependent side effects to preserve adherence and optimise cumulative dose targets.

Perhaps the most compelling finding of this study is the extent of psychosocial burden documented across all severity strata. The prevalence of clinically significant depressive symptoms (35.8%) and anxiety (32.1%) substantially exceeds population base rates, confirming that acne vulgaris carries a disproportionate mental health burden irrespective of objective lesion severity — a phenomenon partly explained by the heightened social significance of facial appearance during adolescence and early adulthood. The finding that 78.1% of severe acne patients reported social withdrawal and 68.8% reported educational or occupational impairment has direct implications for clinical practice: routine psychological screening using validated tools such as PHQ-9 and GAD-7, integrated within dermatology consultations, should be considered standard of care rather than an optional adjunct. The psychiatric referral rate of 19.0% in this cohort likely represents an underestimate of true need, given that many patients may be reluctant to acknowledge or disclose psychological symptoms in a medical setting.

This study has several limitations. As a single-centre tertiary care study, selection bias towards more severe or treatment-refractory cases is inherent, limiting external validity to primary and secondary care populations. The lack of a control arm precludes causal inference regarding treatment efficacy, though this was not the primary objective of this observational study. Self-reported data on dietary habits and aggravating factors are subject to recall bias. The 24-week follow-up, while clinically meaningful, may be insufficient to capture long-term relapse rates and the full durability of isotretinoin-induced remission. Future multi-centre longitudinal studies with longer follow-up, including objective sebometry data and hormonal profiling, would further enrich the evidence base.

Conclusion

Acne vulgaris in tertiary care settings manifests across a broad clinical spectrum, with males exhibiting disproportionate severe disease, and post-inflammatory hyperpigmentation occurring in over half of all patients — a finding of particular clinical relevance in darker-skinned populations. Psychological stress and dietary factors are the predominant reported triggers, mandating their integration into the counselling framework for all severity groups. Oral isotretinoin remains the most effective therapeutic option for severe acne, with excellent responses documented in nearly 60% of patients at 24 weeks. The substantial psychosocial burden — including clinically significant depression and anxiety exceeding one-third of the cohort — demands systematic psychological screening as a non-negotiable component of acne management in tertiary care. A holistic, severity-stratified, patient-centred approach incorporating pharmacological treatment, dietary modification, and psychosocial support offers the most comprehensive framework for improving outcomes in this highly prevalent and impactful condition.

References

1. Zaenglein AL, Pathy AL, Schlosser BJ, et al. Guidelines of care for the management of acne vulgaris. J Am Acad Dermatol. 2016;74(5):945-973.e33. doi:10.1016/j.jaad.2015.12.037
2. Tan JKL, Bhate K. A global perspective on the epidemiology of acne. Br J Dermatol. 2015;172(Suppl 1):3-12. doi:10.1111/bjd.13462
3. Thiboutot D, Gollnick H, Bettoli V, et al. New insights into the management of acne: an update from the Global Alliance to Improve Outcomes in Acne Group. J Am Acad Dermatol. 2009;60(5 Suppl):S1-S50. doi:10.1016/j.jaad.2009.01.019
4. Dalgard FJ, Gieler U, Tomas-Aragones L, et al. The psychological burden of skin diseases: a cross-sectional multicenter study among dermatological out-patients in 13 European countries. J Invest Dermatol. 2015;135(4):984-991. doi:10.1038/jid.2014.530
5. Silverberg JI, Silverberg NB. Epidemiology and extracutaneous comorbidities of severe acne in adolescence: a US population-based study. Br J Dermatol. 2014;170(5):1136-1142. doi:10.1111/bjd.12912
6. Bhate K, Williams HC. Epidemiology of acne vulgaris. Br J Dermatol. 2013;168(3):474-485. doi:10.1111/bjd.12149
7. Melnik BC. Evidence for acne-promoting effects of milk and other insulinotropic dairy products. Nestle Nutr Workshop Ser Pediatr Program. 2011;67:131-145. doi:10.1159/000325580
8. Zouboulis CC, Jourdan E, Picardo M. Acne is an inflammatory disease and alterations of sebum composition initiate acne lesions. J Eur Acad Dermatol Venereol. 2014;28(5):527-532. doi:10.1111/jdv.12298
9. Dreno B, Thiboutot D, Gollnick H, et al. Large-scale worldwide observational study of adherence with acne therapy. Int J Dermatol. 2010;49(4):448-456. doi:10.1111/j.1365-4632.2010.04416.x
10. Layton AM, Eady EA, Whitehouse H, Del Rosso JQ, Fedorowicz Z, van Zuuren EJ. Oral spironolactone for acne vulgaris in adult females: a hybrid systematic review. Am J Clin Dermatol. 2017;18(2):169-191. doi:10.1007/s40257-016-0245-x
11. Finlay AY, Khan GK. Dermatology Life Quality Index (DLQI) — a simple practical measure for routine clinical use. Clin Exp Dermatol. 1994;19(3):210-216. doi:10.1111/j.1365-2230.1994.tb01167.x
12. Jovic A, Marinovic B, Kostovic K, Ceovic R, Basta-Juzbasic A, Bukvic Mokos Z. The impact of pyschological stress on acne. Acta Dermatovenerol Croat. 2017;25(2):133-141.

13. Rathi SK. Acne vulgaris treatment: the current scenario. Indian J Dermatol. 2011;56(1):7-13. doi:10.4103/0019-5154.77543
14. Kraft J, Freiman A. Management of acne. CMAJ. 2011;183(7):E430-E435. doi:10.1503/cmaj.090374
15. Nast A, Dréno B, Bettoli V, et al. European evidence-based (S3) guidelines for the treatment of acne – update 2016. J Eur Acad Dermatol Venereol. 2016;30(Suppl 5):1-52. doi:10.1111/jdv.13783
16. Shields A, Patel H, Maden M, et al. Systematic review of validated IGA scales used as primary endpoints in acne vulgaris clinical trials. J Eur Acad Dermatol Venereol. 2021;35(12):2334-2345. doi:10.1111/jdv.17508