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Clinical Severity of Acne Vulgaris and Its Impact on Quality of Life in Patients Attending a Tertiary Care Centre: A Cross-Sectional Study

Dr Pooja Thagele[1], Dr Tarun Choudhary[2], Dr Nidhi Choudhary[3]

[1,2]Post graduate resident, Dermatology, RKDF Medical College Hospital & Research Center, Bhopal MP
[3]Professor and HOD, Dermatology, RKDF Medical college hospital & Research Center, Bhopal MP

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Corresponding Author:

Dr Pooja Thagele
Post graduate resident, Dermatology, RKDF Medical College Hospital & Research Center, Bhopal MP

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ABSTRACT

Background: Acne vulgaris is a common chronic inflammatory disorder of the pilosebaceous unit that affects both physical appearance and emotional well-being. In many patients, the burden of acne extends beyond skin lesions and includes embarrassment, reduced confidence, and impaired daily functioning. This study was conducted to evaluate the clinical severity of acne vulgaris and to assess its impact on quality of life among patients attending a tertiary care dermatology centre.

Methods: A hospital-based cross-sectional observational study was carried out in the Department of Dermatology, Venereology and Leprosy at RKDF Medical College Hospital and Research Centre, Bhopal, over 18 months. A total of 170 patients aged above 15 years with clinically diagnosed acne vulgaris were included. Data on sociodemographic and clinical variables were collected using a structured proforma. Acne was graded clinically into four grades. Quality of life was measured using the Dermatology Life Quality Index (DLQI).

Results: Most patients were aged 21–25 years (66.47%), and males were slightly more common (52.35%). Grade 3 acne was the most frequent clinical grade (27.06%). Very large and extremely large impairment in quality of life was seen in 44.12% and 24.71% of patients, respectively. Mean DLQI scores increased steadily with acne grade, from 8.81±5.07 in Grade 1 to 20.77±5.79 in Grade 4 ($p<0.001$). A significant association was found between acne severity and DLQI categories ($p<0.0001$). Acne grade also showed a moderate positive correlation with DLQI score ($r=0.5466$, $p<0.001$).

Conclusion: Acne vulgaris imposed a substantial quality-of-life burden in this study population. Increasing clinical severity was clearly associated with worsening psychosocial impairment. Routine assessment of quality of life along with clinical grading may help clinicians plan more comprehensive and patient-centred management.

Keywords: Acne vulgaris; quality of life; DLQI; acne severity; cross-sectional study; tertiary care.

INTRODUCTION

Acne vulgaris is a chronic inflammatory disorder of the pilosebaceous unit and remains one of the most common dermatological problems seen in adolescents and young adults. Although it is often considered a routine skin disease, its effect can be much wider because it may lead to persistent lesions, post-acne pigmentation, scarring, and marked emotional distress. Current understanding shows that acne develops through multiple interacting mechanisms, including increased sebum production, altered follicular keratinization, microbial imbalance involving *Cutibacterium acnes*, and inflammation. The disease burden is high worldwide, and its frequency in dermatology practice makes it an important public health and clinical concern. Standardized severity grading is therefore necessary for both treatment planning and clinical research, and validated instruments such as the Dermatology Life Quality Index (DLQI) are useful for measuring how much the disease affects day-to-day life. [1-6]

The psychosocial effect of acne is often disproportionate to the visible extent of disease. [7,8] Many patients experience low self-esteem, social hesitation, reduced confidence, and stress even when lesions are not clinically severe. Indian studies have also shown that acne can significantly impair quality of life, making it important to assess both the skin disease and the patient's subjective experience. In a country like India, where appearance-related concerns, delayed consultation, self-medication, and prolonged untreated disease are common, local data from tertiary care centres are valuable. The present study was therefore undertaken to assess the clinical severity of acne vulgaris and to examine its effect on quality of life using the DLQI in patients attending a tertiary care hospital.

MATERIALS AND METHODS

Study design and setting

This study was conducted as a hospital-based cross-sectional observational study in the Department of Dermatology, Venereology and Leprosy at RKDF Medical College Hospital and Research Centre, Jatkhedi, Bhopal, Madhya Pradesh. Institutional approval was obtained before the study was started.

Study participants

Patients aged more than 15 years who attended the dermatology outpatient department and were clinically diagnosed with acne vulgaris were considered for inclusion. Both male and female patients were eligible. Patients were excluded if they were below 15 years of age, were using drugs known to precipitate acne, had any present or past psychiatric illness, had other dermatological or systemic illnesses likely to affect quality of life independently, were pregnant or lactating, or were unwilling to participate. Written informed consent was obtained from all participants before enrolment.

Sample size and sampling

The sample size was calculated using the standard prevalence formula, $\mathbf{n = Z^2pq/d^2}$. Using a previously reported prevalence of 68%, Z value of 1.96, and allowable error of 7%, the final sample size was 170. Eligible patients were enrolled consecutively during the study period until the required sample size was achieved.

Clinical assessment

A predesigned structured proforma was used to record age, sex, residence, duration of acne, family history, previous treatment history, and associated clinical details. Dermatological examination included assessment of lesion types, site of involvement, scarring, and post-acne hyperpigmentation. Acne severity was graded clinically into four grades: Grade 1 for comedones with occasional papules, Grade 2 for papules and comedones with few pustules, Grade 3 for predominant pustules, nodules, or abscesses, and Grade 4 for cysts, abscesses, and widespread scarring.

Quality of life assessment

Quality of life was assessed using the Dermatology Life Quality Index questionnaire. The DLQI contains 10 questions covering symptoms and feelings, daily activities, leisure, work or school, personal relationships, and treatment. Each item was scored from 0 to 3, giving a total score between 0 and 30. Scores were interpreted as no effect (0–1), small effect (2–5), moderate effect (6–10), very large effect (11–20), and extremely large effect (21–30).

Statistical analysis

Data were entered into Microsoft Excel and analysed using SPSS. Quantitative variables were expressed as mean and standard deviation, while qualitative data were presented as frequency and percentage. Association between acne grade and DLQI category was tested using chi-square test. Mean DLQI scores across acne grades were compared using ANOVA. Correlation between acne severity and DLQI score was assessed using correlation analysis. A p value of less than 0.05 was considered statistically significant.

RESULTS

In this study, acne vulgaris was most common in young adults aged 21–25 years, and the sex distribution was nearly equal with a slight male predominance. Most patients had disease duration of more than 12 months, and facial involvement either alone or with the trunk accounted for the majority of cases. Oily skin, positive family history, scarring, and post-acne hyperpigmentation were also common clinical findings.

Table 1. Clinico-demographic profile of study participants

Variable	Category	n (%)
Age group	<20 years	37 (21.76)
	21–25 years	113 (66.47)
	>25 years	20 (11.76)
Sex	Male	89 (52.35)
	Female	81 (47.65)
BMI	Underweight	1 (0.59)
	Normal	117 (68.82)

	Overweight	51 (30.00)
	Obese	1 (0.59)
Education	≤Primary	13 (7.65)
	Secondary/HS	81 (47.65)
	Graduate+	76 (44.71)
Marital status	Unmarried	116 (68.24)
	Married	54 (31.76)
Residence	Rural	91 (53.53)
	Urban	79 (46.47)
Family history of acne	Yes	90 (52.94)
	No	80 (47.06)
Duration of acne	<6 months	13 (7.65)
	6–12 months	12 (7.06)
	>12 months	145 (85.29)
Site of involvement	Face	66 (38.82)
	Trunk	43 (25.29)
	Face + trunk	61 (35.88)
Skin type	Oily	92 (54.12)
	Normal	52 (30.59)
	Dry	26 (15.29)
Scarring	None	45 (26.47)
	Mild	44 (25.88)
	Moderate	42 (24.71)
	Severe	39 (22.94)
Post-acne hyperpigmentation	Yes	76 (44.71)
	No	94 (55.29)
Menstrual flare among females (n=81)	Yes	57 (70.37)
	No	24 (29.63)

Table 2. Acne severity and quality-of-life findings

Outcome	**Category / Value**	**Result**
Acne grade distribution	Grade 1	37 (21.76)
	Grade 2	43 (25.29)
	Grade 3	46 (27.06)
	Grade 4	44 (25.88)
DLQI category distribution	No effect (0–1)	4 (2.35)
	Small effect (2–5)	22 (12.94)
	Moderate effect (6–10)	27 (15.88)
	Very large effect (11–20)	75 (44.12)
	Extremely large effect (21–30)	42 (24.71)
Mean DLQI by acne grade	Grade 1	8.81 ± 5.07
	Grade 2	12.37 ± 7.13
	Grade 3	16.30 ± 7.46
	Grade 4	20.77 ± 5.79
Comparison of mean DLQI across grades	ANOVA p value	<0.001
Association of acne grade with DLQI category	Chi-square p value	<0.0001
Correlation between acne grade and DLQI score	r	0.5466
	p value	<0.001

With respect to severity, Grade 3 acne was the most frequent, followed closely by Grade 4 and Grade 2, showing that moderate to severe disease constituted a large part of the study population. Quality-of-life impairment was marked, with 68.83% of patients falling into the very large or extremely large DLQI impact categories. Mean DLQI scores showed a clear stepwise rise from Grade 1 to Grade 4 acne, and this trend was highly significant on ANOVA. The association between acne grade and DLQI category was also highly significant, and acne severity showed a moderate positive correlation with DLQI score. In addition, higher acne grades were significantly associated with markers of androgenicity, scarring, oily skin, post-acne hyperpigmentation, BMI, and menstrual flare among female patients, whereas sex, residence, family history, education, marital status, and site of involvement were not significantly associated with acne grade.

DISCUSSION

The present study showed that acne vulgaris was seen predominantly in young adults, especially in the 21–25-year age group, with almost equal involvement of both sexes. This age pattern is in agreement with the natural history of acne, which is closely related to hormonal activity and sebaceous gland stimulation during late adolescence and early adulthood. Previous Indian studies have also reported that acne is more common in younger age groups, although the exact peak age varies across centres. The slight male predominance observed in our study differs from some hospital-based reports that showed female predominance, probably because women may seek consultation earlier for cosmetic reasons. [9,12,13,16]

An important finding of the present study was the high proportion of patients with long-standing disease, oily skin, scarring, and pigmentary sequelae. These observations suggest delayed consultation and prolonged inflammatory activity in many patients. Family history was present in more than half of the participants, which supports the known familial tendency of acne. The significant association of higher acne grades with BMI, post-acne hyperpigmentation, scarring, and androgenicity markers in this study points toward the contribution of metabolic and hormonal influences in more severe disease. Similar associations have been discussed in earlier studies, although the strength of correlation has not been uniform across all populations. [13-15]

The quality-of-life findings are especially important. In the present study, most patients reported a very large or extremely large effect of acne on daily life, and mean DLQI scores increased steadily with clinical severity. This supports the view that acne is not only a cosmetic problem but also a condition with considerable psychosocial burden. Durai and Nair, Hazarika and Rajaprabha, Kundale et al., and Sivaramakrishnan and Jayakar all reported significant impairment in quality of life among acne patients, although the absolute mean DLQI scores in those studies were generally lower than those found in the present study. The difference may be explained by the larger proportion of Grade 3 and Grade 4 cases in our tertiary care setting. [9-12]

The present study also showed a moderate positive correlation between acne grade and DLQI score, which means that quality of life worsened as clinical severity increased. This is consistent with previous literature, including studies by Kundale et al., Rayudu et al., and Yıldırım et al. [11,14-16] However, some studies have also noted that psychological burden may not always match clinical severity exactly, and even mild acne may produce significant emotional distress in selected patients. This highlights the need to assess both objective severity and subjective disease impact during routine care.

CONCLUSION

Acne vulgaris in this study was common among young adults and was frequently associated with chronic disease, oily skin, scarring, and pigmentary sequelae. A large proportion of patients had moderate to severe acne, and the psychosocial burden was substantial. Quality-of-life impairment increased significantly with clinical severity, as shown by both category-wise analysis and mean DLQI scores. These findings support the routine use of quality-of-life assessment along with clinical grading in acne patients. Early treatment, counselling, and attention to psychosocial distress may improve overall patient care.

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