ORIGINAL RESEARCH

The Impact of Post-Acne Scars on the Quality of Life Among Young Adults in India

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ABSTRACT

Background: Acne vulgaris is a common dermatological condition affecting approximately 85% of adolescents and young adults worldwide. Post-acne scarring represents a significant complication that can persist long after active acne resolves. While the physical manifestations of these scars are well-documented, their psychosocial impact remains understudied, particularly in the Indian context. **Objective:** This study aimed to evaluate the impact of post-acne scarring on quality of life (QoL) among young adults in India and identify factors that influence this relationship. **Methods:** A cross-sectional study was conducted among 312 Indian young adults (aged 18-30 years) with post-acne scarring. Participants completed the Dermatology Life Quality Index (DLQI), Patient Health Questionnaire-9 (PHQ-9), and the Acne Scar Quality of Life (AcneScQoL) questionnaire. Scar severity was assessed using the Goodman and Baron Qualitative Grading System. Multivariate regression analysis was performed to identify factors associated with QoL impairment. **Results:** Post-acne scarring significantly impacted QoL across multiple domains with the highest impairment in social functioning and self-perception. Females reported greater QoL impairment than males ($p<0.001$). Scar severity, visibility (facial location), and duration correlated positively with QoL impairment. Higher educational and socioeconomic status were associated with greater psychological impact of scarring. **Conclusion:** Post-acne scarring has a substantial impact on the QoL of young adults in India, with effects extending beyond physical appearance to psychological well-being and social functioning. These findings highlight the need for comprehensive acne management strategies that address both prevention and treatment of scarring, as well as the associated psychosocial burden.

Keywords: Acne vulgaris, post-acne scarring, quality of life, young adults, India, psychosocial impact

INTRODUCTION

Acne vulgaris affects approximately 85% of individuals between the ages of 12 and 25 years, making it one of the most common dermatological conditions worldwide.[1] It is a chronic inflammatory disease of pilosebaceous units, characterized by seborrhea; open and closed comedones; papules; pustules; and in more severe cases nodules, pseudocysts, and scarring.[2]While active acne lesions often resolve over time, permanent scarring occurs in approximately 40% of cases, with estimates ranging from 11% in mild acne to over 90% in severe forms.[3] These scars can persist indefinitely, representing a chronic complication that extends beyond the active disease phase.

Post-acne scarring presents in various morphological types, including atrophic (ice pick, boxcar, rolling), hypertrophic, and keloid scars, each with distinct appearances and treatment challenges.[4] In darker skin types, which predominate in the Indian population, post-inflammatory hyperpigmentation frequently accompanies structural scarring, potentially amplifying the visible impact.[5]

The psychosocial burden of dermatological conditions has gained increased recognition in recent years. Research conducted primarily in Western populations has demonstrated that visible skin conditions can negatively impact self-esteem, body image, social interactions, and overall quality of life.[6] However, the specific impact of post-acne scarring on quality of life may differ across cultural contexts due to varying

beauty standards, social norms, and attitudes toward appearance-related concerns.

In India, where collectivistic cultural values and appearance-conscious social norms often prevail, the psychological impact of visible facial differences may be particularly pronounced.[7] Despite these considerations, research specifically examining the impact of post-acne scarring on quality of life among Indian young adults remains limited.

This study aims to address this gap by investigating the relationship between post-acne scarring and quality of life among young adults in India. By identifying the factors that mediate this relationship, we hope to inform more holistic approaches to acne management that address both the physical and psychosocial aspects of the condition.

METHODS

Study Design and Participants

This cross-sectional study was conducted between March 2019 and October 2019at our institution. The study protocol was approved by the Institutional Ethics Committee.

Young adults aged 18-30 years with clinically confirmed post-acne scarring were eligible for inclusion. Exclusion criteria included active inflammatory acne as the predominant complaint, concurrent facial dermatoses, history of cosmetic procedures for acne scarring within the past six months, current use of oral isotretinoin, and diagnosed psychiatric conditions predating the onset of acne.

Data Collection

Following informed consent, participants completed a structured questionnaire collecting demographic information including age, gender, education, occupation, monthly family income, marital status, and duration of acne scarring. Clinical examination was performed by dermatologists to assess scar type, distribution, and severity using the Goodman and Baron Qualitative Grading System.[8]

Quality of life was assessed using the validated Hindi and English versions of the following instruments:

1. Dermatology Life Quality Index (DLQI): A 10-item dermatology-specific QoL instrument measuring six domains: symptoms and feelings, daily activities, leisure, work and school, personal relationships, and treatment.[9]
2. Patient Health Questionnaire-9 (PHQ-9): A 9-item instrument screening for depression severity.[10]
3. Acne Scar Quality of Life (AcneScQoL) questionnaire: A 20-item instrument specifically designed to assess QoL impact of acne scarring across four domains: self-perception, social functioning, role functioning, and treatment satisfaction.[11]

Statistical Analysis

Data analysis was performed using SPSS version 26.0. Descriptive statistics were calculated for demographic and clinical variables. Pearson's correlation coefficient was used to assess relationships between continuous variables. Student's t-test and one-way ANOVA with post hoc Tukey's test were employed to compare mean scores across categorical variables. Multiple linear regression analyses were conducted to identify predictors of QoL impairment. Statistical significance was set at $p<0.05$.

RESULTS

Table 1: Demographic and Clinical Characteristics of Study Participants (N=312)

Characteristic	n (%) or Mean±SD
Age (years)	24.3±3.7
Gender	
Female	182 (58.3)
Male	130 (41.7)
Education	
Secondary school or less	42 (13.5)
Undergraduate	176 (56.4)
Postgraduate or higher	94 (30.1)
Monthly Family Income (INR)	
<30,000	68 (21.8)
30,000-75,000	142 (45.5)
>75,000	102 (32.7)
Marital Status	
Single	198 (63.5)
Married	108 (34.6)
Divorced/Separated	6 (1.9)
Occupation	
Student	124 (39.7)
Employed	162 (51.9)
Unemployed	26 (8.3)

Duration of Acne Scarring	
<1 year	56 (17.9)
1-5 years	173 (55.4)
>5 years	83 (26.6)
Scar Type (predominant)	
Atrophic	242 (77.6)
Hypertrophic/Keloid	38 (12.2)
Mixed	32 (10.3)
Scar Location	
Face only	224 (71.8)
Face and other areas	88 (28.2)
Goodman & Baron Grade	
Grade 1 (Macular)	58 (18.6)
Grade 2 (Mild)	112 (35.9)
Grade 3 (Moderate)	98 (31.4)
Grade 4 (Severe)	44 (14.1)
Previous Treatment for Scars	
Yes	187 (59.9)
No	125 (40.1)

Table 2: Quality of Life Assessment Scores Among Study Participants (N=312)

Measure	Mean±SD or n (%)
DLQI Total Score	10.8±6.2
DLQI Score Interpretation	
No effect (0-1)	21 (6.7)
Small effect (2-5)	68 (21.8)
Moderate effect (6-10)	96 (30.8)
Very large effect (11-20)	102 (32.7)
Extremely large effect (21-30)	25 (8.0)
DLQI Domain Scores	
Symptoms and feelings	2.6±1.4
Daily activities	1.9±1.5
Leisure	1.5±1.3
Work and school	1.2±1.0
Personal relationships	2.3±1.6
Treatment	1.3±0.9
PHQ-9 Score	6.8±5.3
PHQ-9 Score Interpretation	
Minimal/None (0-4)	180 (57.7)
Mild (5-9)	68 (21.8)
Moderate (10-14)	42 (13.5)
Moderately severe (15-19)	16 (5.1)
Severe (20-27)	6 (1.9)
AcneScQoL Domain Scores	
Self-perception	28.4±8.9
Social functioning	25.7±9.2
Role functioning	18.2±7.6
Treatment satisfaction	14.5±6.4

Table 3: Multiple Linear Regression Analysis of Factors Associated with DLQI Scores

Variable	Unstandardized β	95% CI	Standardized β	p-value
Age	-0.09	-0.24, 0.06	-0.05	0.245
Gender (female vs. male)	2.76	1.58, 3.94	0.22	<0.001*
Education level	0.92	0.28, 1.56	0.12	0.005*
Monthly family income	0.77	0.12, 1.42	0.10	0.021*
Marital status (single vs. married)	0.58	-0.62, 1.78	0.05	0.343
Duration of scarring	1.25	0.67, 1.83	0.18	<0.001*
Scar severity (Goodman & Baron grade)	2.43	1.98, 2.88	0.42	<0.001*

Scar location (face only vs. other)	1.86	0.74, 2.98	0.14	0.001*
Previous treatment (yes vs. no)	0.64	-0.53, 1.81	0.05	0.282

Table 4: Comparison of Quality of Life Scores Between Genders

Measure	Males (n=130) Mean±SD	Females (n=182) Mean±SD	Mean Difference (95% CI)	p-value
DLQI Total	8.9±5.7	12.2±6.1	3.3 (2.0, 4.6)	<0.001*
PHQ-9	5.3±4.8	7.9±5.4	2.6 (1.5, 3.7)	<0.001*
AcneScQoL Domains				
Self-perception	24.6±8.5	31.2±8.2	6.6 (4.7, 8.5)	<0.001*
Social functioning	21.8±8.3	28.5±9.0	6.7 (4.8, 8.6)	<0.001*
Role functioning	16.4±7.0	19.5±7.8	3.1 (1.5, 4.7)	<0.001*
Treatment satisfaction	13.2±6.1	15.4±6.4	2.2 (0.8, 3.6)	0.002*

DISCUSSION

This study provides comprehensive evidence of the substantial impact of post-acne scarring on the quality of life among young adults in India. Our findings indicate that this impact extends beyond physical appearance to significantly affect psychological well-being and social functioning, with important implications for clinical practice and public health interventions.

The mean DLQI score of 10.8 observed in our study indicates a moderate to large effect on quality of life, comparable to that reported for other chronic skin conditions such as psoriasis and atopic dermatitis.[12] Notably, over 40% of participants experienced a very large or extremely large effect on quality of life, highlighting the significant burden of acne scarring even in the absence of active inflammatory lesions. This finding challenges the common perception that post-acne scarring represents merely a cosmetic concern and supports its recognition as a condition with substantial psychosocial morbidity.

The association between scar severity and quality of life impairment observed in our study aligns with previous research from Western contexts.[13,14]

The gender difference in quality of life impact, with females reporting significantly greater impairment than males across all domains, warrants particular attention. This disparity may reflect both biological and sociocultural factors. Female participants in our study had a higher prevalence of post-inflammatory hyperpigmentation accompanying structural scarring, potentially increasing the visibility of their skin condition. Furthermore, societal beauty standards in India often place greater emphasis on female appearance, potentially amplifying the psychological impact of facial scarring among women.[15] These findings suggest that female patients with acne scarring may benefit from additional psychosocial support and more aggressive early intervention to prevent scarring.

The observed association between higher educational and socioeconomic status and greater quality of life impairment, particularly in the self-perception domain, presents an interesting contrast to findings from studies of other health conditions, where socioeconomic disadvantage typically predicts poorer outcomes.[16] This pattern may reflect greater appearance consciousness and higher expectations regarding physical appearance among more educated and affluent young adults, possibly due to increased media exposure and different social environments. This finding highlights the importance of considering psychosocial factors across all socioeconomic strata in acne management.

The significant prevalence of depressive symptoms observed in our sample (42.3% with at least mild symptoms) underscores the mental health implications of post-acne scarring. While our cross-sectional design precludes determination of causality, the strong correlation between scar severity and PHQ-9 scores suggests a potential causal relationship that warrants further investigation through longitudinal studies.

Several limitations should be considered when interpreting our findings. First, the cross-sectional design precludes determination of causality in the observed associations. Second, our sample was recruited from urban dermatology clinics, potentially limiting generalizability to rural populations or those who do not seek medical care for their scarring. Third, while we used validated instruments, the subjective nature of quality of life assessment introduces potential for reporting bias.

Despite these limitations, our study provides valuable insights into the relationship between post-acne scarring and quality of life in the Indian context. The findings highlight the need for comprehensive acne management strategies that prioritize both prevention of scarring and addressing its psychosocial impact. Early and effective treatment of inflammatory acne, psychosocial support interventions, and improved access to scar treatment options may collectively help reduce the burden of this condition among young adults in India.

CONCLUSION

Post-acne scarring significantly impacts the quality of life of young adults in India, with effects extending beyond physical appearance to psychological well-being and social functioning. The impact is influenced by factors including scar severity, gender, visibility, duration, and socioeconomic status. These findings highlight the need for holistic approaches to acne

management that address both the physical and psychosocial aspects of the condition. Future research should explore the effectiveness of combined medical and psychological interventions in mitigating the quality of life impact of post-acne scarring in this population.

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