Journal of Young Pharmacists, 2025; 17(2):463-469.
https://www.jyoungpharm.org

Original Article

Clinical Profiles, Prescription Trends, and Quality of Life in Young Adults with Acne Vulgaris: A Cross-Sectional Study in a Tertiary Care Teaching Hospital

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ABSTRACT

Background: This study aimed to analyze the demographic distribution, acne characteristics, treatment patterns, and quality of life impact of acne vulgaris. **Materials and Methods:** A cross-sectional study was conducted at a tertiary care hospital, it involved 70 patients with clinically diagnosed acne. **Results:** The study found a slightly higher prevalence of acne in females aged 19-45 years. Common lesions were located on the cheeks and forehead, with open comedones being most frequent. Icepick scars were more common in males. The study showed that acne severity increased with age, with younger individuals often experiencing moderate to severe forms. A variety of treatments, including topical and oral medications, were prescribed, with an average of over four medications per prescription. The Dermatology Life Quality Index (DLQI) results showed varying impacts on quality of life, highlighting the need for gender-specific treatment strategies. The study emphasizes the importance of understanding acne's demographic and clinical variations for better management. **Conclusion:** This study reveals notable age and gender variations in the distribution and severity of acne vulgaris.

Keywords: Acne vulgaris, Demographic distribution, Open comedones, Icepick scars, Dermatology life quality index.

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Received: 26-11-2024;
Revised: 13-01-2025;
Accepted: 02-04-2025.

INTRODUCTION

Acne vulgaris is a common skin condition that affects a large number of adolescents and young adults, impacting both physical appearance and emotional well-being. This chronic inflammatory disorder of the pilosebaceous units presents as comedones, papules, pustules, and nodules, often leading to scarring and persistent dermatological issues (Zaenglein, 2018; Tuchayi *et al.*, 2015). Despite its widespread prevalence, acne treatment remains challenging due to its varied presentation and the differing responses to available therapies (Knutsen-Larson *et al.*, 2012; Williams *et al.*, 2012). Treatment approaches, including topical medications, systemic antibiotics, and hormonal therapies, are influenced by factors such as the severity of the condition, patient preferences, and the prescribing physician's expertise (Zaenglein *et al.*, 2016). However, the success of these therapies is not solely reflected in clinical outcomes but also in their effects on patients' quality of life, as acne is closely associated with psychological distress, including low self-esteem, social isolation, and depression (Nguyen *et al.*, 2016; Özkesici Kurt, 2022; Sood *et al.*, 2020). While extensive research has focused on clinical management, there is a gap in understanding the broader impact of treatment choices on patient satisfaction and overall well-being. This study seeks to examine the clinical features, treatment patterns, and quality of life among young adults with acne vulgaris, aiming to enhance both the medical and psychological management of the condition (Ak, 2019).

MATERIALS AND METHODS

This cross-sectional study, conducted over six months and approved by the Sumandeep Vidyapeeth Institutional Ethics Committee (SVIEC/ON/PHAR/BNPG22/DEC/23/I6), involved patients aged 16-45 with clinically diagnosed Acne vulgaris from the Department of dermatology, venerology & leprosy at Dhiraj Hospital. The sample size of 70 participants was determined based on guidance from a statistician and subsequently enrolled in the study. Participants were selected based on specific inclusion and exclusion criteria, excluding those with diabetes, thyroid disorders, tuberculosis, angina, acne fulminans, acne

DOI: 10.5530/jyp.20251592

conglobata, or any conditions or medications that might affect the study results along with those not willing to participate in the study. After explaining the study, patients received a Participant Information Sheet in their local language and were asked to sign informed consent forms. Data collection included demographic details, acne characteristics, and health history, recorded through case report forms and categorized using the Pillsburry acne grading system; Grade 1: Infrequent papules and comedones; Grade 2: Comedones, papules, a few pustules; Grade 3: Nodules, abscesses, predominant pustules; Grade 4: Abscesses, cysts, extensive scarring. Prescription details were noted, and the Dermatology Life Quality Index (DLQI) was assessed with a verbal explanation. Patient identities were kept confidential, and all data was documented in Microsoft Excel for analysis and storage.

RESULTS

Age and gender wise distribution of acne cases

In the study, the distribution of acne cases by age and gender revealed that among individuals aged 16-18, there were 8 males (22.22%) and 5 females (14.70%), making up a total of 13 cases (18.57%). In the older age group of 19-45 years, there were 28 males (77.78%) and 29 females (85.29%), totaling 57 cases (81.42%). Overall, the total number of acne cases was 36 males (51.42%) and 34 females (48.57%), amounting to 70 cases (100%). This indicates a slightly higher prevalence of acne among females in the 19-45 age group, while the ratio between males and females was relatively balanced across the entire sample (Figure 1).

Distribution of acne vulgaris across different facial areas in males and females

Acne lesions were most commonly found on the cheeks and forehead for both genders. In males, 51.42% of cases were on the cheeks, and 44.28% on the forehead. In females, 48.57% had lesions on the cheeks, and 40% on the forehead. Fewer cases appeared on the chin (28.57% in males, 17.14% in females) and nose (15.71% in males, 7.14% in females). Overall, the cheeks and forehead were the most affected areas, with a notable decrease in lesions on the chin and nose (Table 1).

Cutaneous examination of acne vulgaris in male and female

The cutaneous examination of acne vulgaris revealed gender-based differences in lesion types. In males, open comedones (50%) were most common, followed by closed comedones (48.57%) and papules (45.71%). Pustules affected 28.57%, and nodules 24.28%, while cysts were rare (5.71%). In females, open comedones and papules were equally prevalent (48.57%), with closed comedones at 42.85%. Pustules affected 31.42%, and nodules 11.42%. Notably, females did not have cysts. Overall, open comedones were the most common lesion, with cysts more common in males (Table 2).

Impact of acne vulgaris on facial scarring in both genders

The data on acne scarring shows significant gender differences. Icepick scars, deep and narrow, are more common in males (27.14%) than females (12.85%), suggesting males are more prone to this severe scarring. Box scars, deep and angular, also occur more frequently in males (20%) than females (10%), possibly indicating more severe acne or gender-related healing differences. Rolling scars are evenly distributed, affecting 11.42% of both genders, showing less gender influence. Overall, icepick scars are the most prevalent (40%), followed by box scars (30%) and rolling scars (22.85%). This distribution highlights the higher incidence of icepick scars and the clear gender disparity in their occurrence (Figure 2).

Distribution of acne vulgaris severity by pillsbury classification

The distribution of acne vulgaris cases by severity shows significant age-related trends. For Grade 1 acne (mild), 13.3% of cases are in the 16-18 age group, with 86.67% in the 19-45 range. Grade 2 acne follows a similar pattern, with 17.86% in younger individuals and 82.14% in adults. Grade 3 acne (moderate to severe) is more common in younger individuals, with 36.36% in the 16-18 age group, while Grade 4 acne (most severe) predominates in adults, with 87.5% of cases in the 19-45 range. Overall, the data suggests that as acne severity increases, older individuals are more likely to experience severe acne, whereas younger people are more commonly affected by moderate forms (Figure 3).

Category of drugs used in acne vulgaris

Acne vulgaris is treated using a range of oral and topical medications. Retinoids, such as isotretinoin (oral) and ADA or TRE (topical), regulate skin cell turnover and prevent clogged pores. Antibiotics like doxycycline, azithromycin, and dapsone (oral) and NADI or CLIN (topical) reduce inflammation and bacteria. Fixed-dose combinations, such as BPO with ADA or CLIN with NA, enhance treatment efficacy. Nutritional supplements like zinc sulfate and topical products like Aquasoft FC cream provide additional support. Antihistamines like levocetirizine help manage inflammation. Miscellaneous treatments include BPO, azelaic acid, and cleansing products like Pelleaha and salicylic acid face washes. Medicated shampoos such as ketoconazole with zinc pyrithione manage scalp acne. Moisturizers like Venusia acne control and sunscreens like Enmask 50 support skin health, while chemical peels (salicylic and glycolic) improve texture. This variety of treatments allows for personalized, tailored approaches to acne management (Table 3).

Categories of medications based on the severity of acne vulgaris

In the treatment of acne vulgaris, medications are categorized according to the severity of the condition. For Grade 1 acne, options include oral retinoids and antibiotics, along with topical treatments like retinoids combined with antibiotics, BPO, and CLIN with NA. In Grade 2, oral antibiotics, antihistamines, and retinoids are utilized, paired with topical therapies such as ADA with BPO, Pelleaha face wash, azelaic acid cream, and chemical peels, etc. Grade 3 focuses on a combination of oral antibiotics and retinoids, alongside topical treatments like Pelleaha face wash, ketoconazole with zinc pyrithione shampoo, and CLIN with NA, etc. Finally, for Grade 4 acne, a more intensive approach includes oral retinoids, antibiotics, and nutritional supplements, complemented by topical therapies such as CLIN with NA, BPO with ADA, melalumin gel, and Enmask 50 sunscreen. This structured treatment approach ensures that patients receive appropriate care based on their acne severity (Table 4).

Analysis of prescription

The assessment of acne treatment prescriptions revealed a total of 70 prescriptions, encompassing 241 medications in total. of these, 109 medications (45.22%) were administered orally, while 132 (54.77%) were prescribed topically. On average, each prescription included 4.34 medications. Additionally, there were 58 fixed-dose combinations among the prescribed treatments, indicating a diverse approach to managing acne (Figure 4).

Gender-based classification of the Dermatology Life Quality Index (DLQI)

The Dermatology Life Quality Index (DLQI) classification shows gender-based differences in acne's impact. For males, 2 reported no effect, 8 had a small effect, 12 a moderate effect, 12 a very large effect, and 2 an extremely large effect. For females, the distribution was similar, with 2 reporting no effect, 7 a small effect, 16 a moderate effect, 7 a very large effect, and 2 an extremely large effect (Figure 5).

Table 1: Facial distribution of acne vulgaris.

Gender	Cheeks	Forehead	Chin	Nose
Male	36 (51.42%)	31(44.28%)	20 (28.57%)	11 (15.71%)
Female	34 (48.57%)	28 (40%)	12 (17.14%)	5 (7.14%)
Total	70 (100%)	59 (84.28%)	32 (45.71%)	16 (22.85%)

Table 2: Evaluation of cutaneous lesions in acne vulgaris by gender.

Gender	Open Comedones	Closed Comedones	Papules	Pustules	Nodules	Cysts
Male	35 (50%)	34 (48.57%)	32 (45.71%)	20 (28.57%)	17 (24.28%)	4 (5.71%)
Female	34 (48.57%)	30 (42.85%)	34 (48.57%)	22 (31.42%)	8 (11.42%)	0
Total	69 (98.57)	64 (91.42%)	66 (94.28%)	42 (60%)	25 (35.71%)	4 (5.71%)

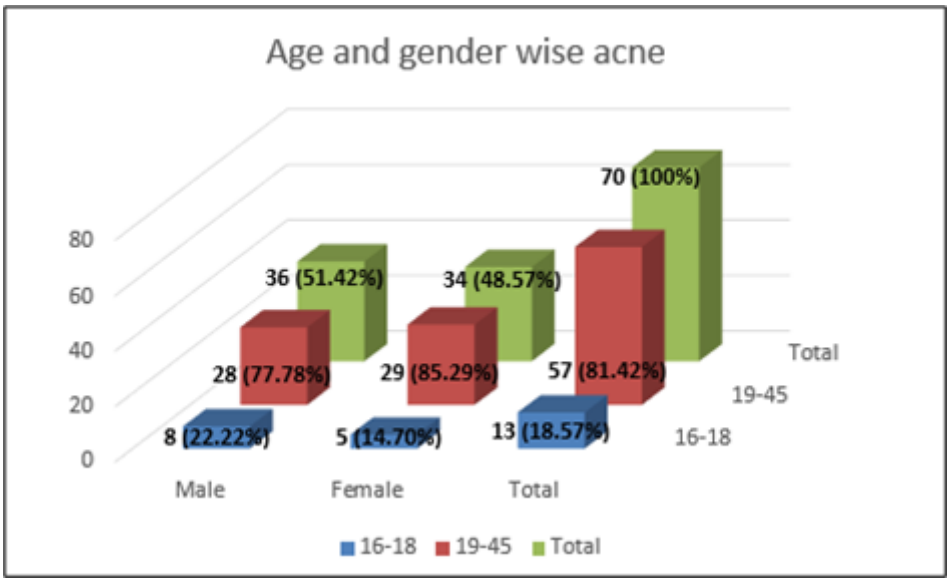

Figure 1: Distribution of acne cases by age and gender.

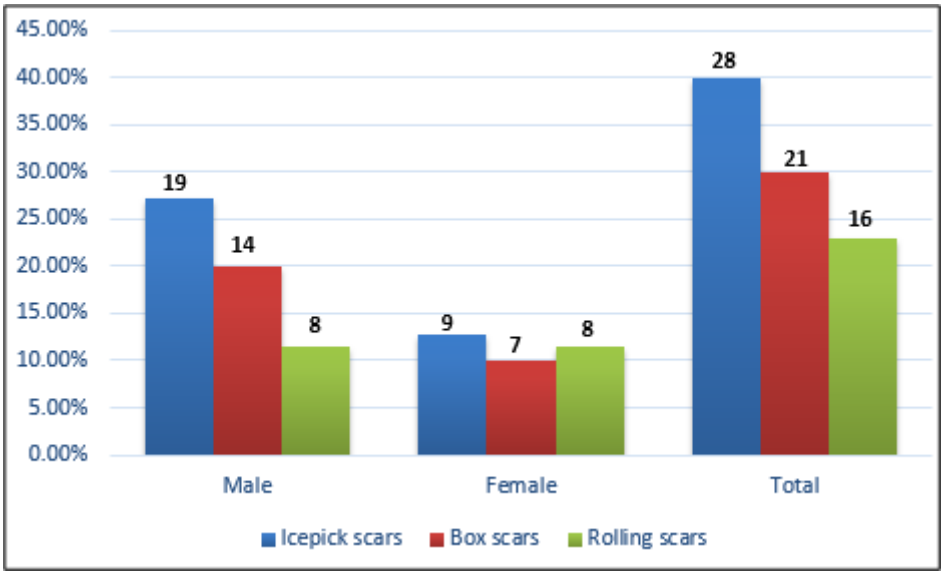

Figure 2: Patterns of facial scarring in acne vulgaris patients.

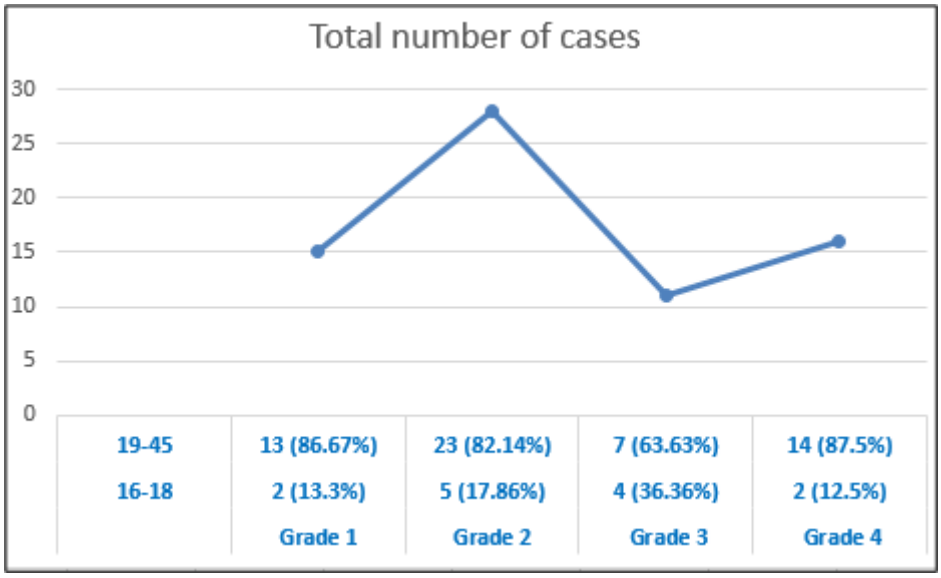

Figure 3: Distribution of acne vulgaris severity grades by gender.

DISCUSSION

Acne vulgaris is a chronic inflammatory disorder of the pilosebaceous unit, impacting 85% of teenagers and young adults (Layton, 2010; Rapp *et al.*, 2006). The distribution of acne cases in this study reveals significant patterns that align with previous research on the demographics and clinical manifestations of acne vulgaris. Among adolescents aged 16-18, the prevalence of acne was notably higher in males (22.22%) compared to females (14.70%), suggesting that while teenage boys may experience a higher incidence of acne, females display a more pronounced prevalence as they transition into adulthood. However, among 19-45 age, the prevalence of acne was notably higher in females (85.29%) compared to males (77.78%). This trend aligns with findings from other studies indicating that women are more affected by acne during their life span due to hormonal fluctuations (Collier *et al.*, 2008; Goulden *et al.*, 1999). The overall balance in gender distribution, with males (51.42%) and females (48.57%) closely represented, suggests that acne is a common concern across both sexes, challenging the perception that it predominantly affects adolescents or males.

Pilo-sebaceous units, or facial regions, were plentiful in areas where acne vulgaris is commonly found (Simpson *et al.*, 2004). Our research indicated that the cheeks were the most affected area, with 100% of cases observed there. This was followed by the forehead, which had an incidence rate of 84.28%. The chin was also significantly impacted, with 45.71% of cases, while the nose had the least prevalence at 22.85%. Our results align with previous studies, which identified the cheeks as the most frequently affected area at 81%, followed by the chin at 67%, mandibular area at 58.3% (Khunger and Kumar, 2012). This distribution highlights

the cheeks as the primary site of acne vulgaris, underscoring the importance of targeted treatment in this region.

A comedone, which can be either open or closed, is a hallmark lesion associated with acne vulgaris. According to previous report, comedones represented the majority of lesions, totaling 133 or 95%. Among these, 58.6% also presented with nodules (5.7%), pustules (14.3%), and papules (Durai and Nair, 2015). Additionally, research by Cunliffe *et al.* (2004) indicates that comedones are the most commonly occurring type of lesion in acne cases. In contrast to previous reports, our study found that open comedones (98.57%) were the most common type of lesion observed. This was followed by closed comedones (91.42%), papules (94.28%), pustules (60%), nodules (35.71%), and cysts (5.71%). Overall, the findings indicated that open comedones were the most frequently observed type of lesion, with closed comedones and papules also being quite prevalent in both genders. Cysts were uncommon, though they were more often seen in males than in females.

The analysis of acne scarring reveals significant gender differences in scar types. Icepick scars, which are deep and narrow, were found in 27.14% of males compared to 12.85% of females, suggesting that males may experience more severe acne or have biological predispositions. Box scars also showed a higher prevalence in males (20%) than females (10%). In contrast, rolling scars were equally distributed between genders, each affecting 11.42%. Overall, icepick scars were the most common, comprising 40% of cases, followed by Boxcar scars (30%) and rolling scars (22.25%). The findings of our study align with previous results, showing that icepick scars make up 60-70% of atrophic scars. These narrow, less-than-2 mm V-shaped lesions penetrate deeply, resisting conventional resurfacing methods. Boxcar scars account for 20-30%, ranging from 1.5-4.0 mm, with sharply defined edges; shallow ones can be treated, but deeper ones remain difficult. Rolling scars, which represent 15-25% and can reach 5 mm in diameter, have a fibrous structure that causes an undulating appearance, necessitating targeted treatment of the underlying tissue (Connolly *et al.*, 2017).

The distribution of acne vulgaris by Pillsbury classification shows significant age variations in severity. Grade 1 acne is mostly found in adults (86.67%), while Grade 2 also predominantly

Table 3: Category of medications for treating acne.

Category	Oral Options	Topical Options
Retinoids	Isotretinoin	ADA, TRE
Antibiotics	Doxycycline, Azithromycin, Dapsone	NADI, CLIN
Fixed dose combination		BPO + ADA, CLIN + ADA, CLIN + NA
Nutritional supplements	Zinc sulphate, Zinc acetate	Aquasoft FC cream
Antihistamines	Levocetrizine	
Miscellaneous		BPO, Azelaic acid cream, Pelleaha face wash, Salicylic acid face wash, Ketoconazole+ zinc pyrithione (shampoo), Venusia acne control moisturizer, Enmask 50 sunscreen, Melalumin gel
Chemical peels		Saliac peel and glyco peel

ADA: Adapalene; **TRE:** Tretinoin; **NADI:** Nadifloxacin; **CLIN:** Clindamycin; **BPO:** Benzoyl peroxide; **NA:** Nicotinamide.

Table 4: Classification of medications according to the severity of acne vulgaris.

Grade	Oral	Topical
Grade 1	Retinoid Antibiotic	Retinoid + antibiotic, BPO, CLIN + NA.
Grade 2	Antibiotic Antihistamines Retinoid	ADA + BPO, Pelleaha face wash, Azelaic acid cream, Ketoconazole+ zinc pyrithione (shampoo), BPO, Retinoids, Salicylic acid face wash, Retinoid + antibiotic, Chemical peels, Venusia acne control moisturizer, Antiboitic, CLIN + NA
Grade 3	Antibiotic Retinoid	Retinoid + antibiotic, Pelleaha face wash, Antiboitic, Ketoconazole+ zinc pyrithione (shampoo), Retinoid, CLIN + NA, BPO
Grade 4	Retinoid Antibiotic Nutritional supplements	CLIN + NA, Antibiotic, BPO + ADA, Melalumin gel, Retinoid, Enmask 50 sunscreen

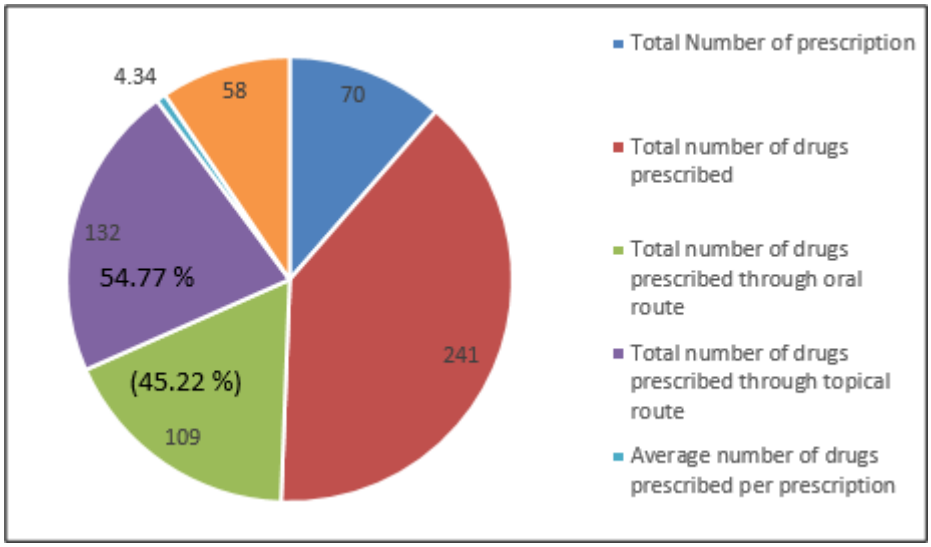

Figure 4: Evaluation of prescription patterns in acne vulgaris patients.

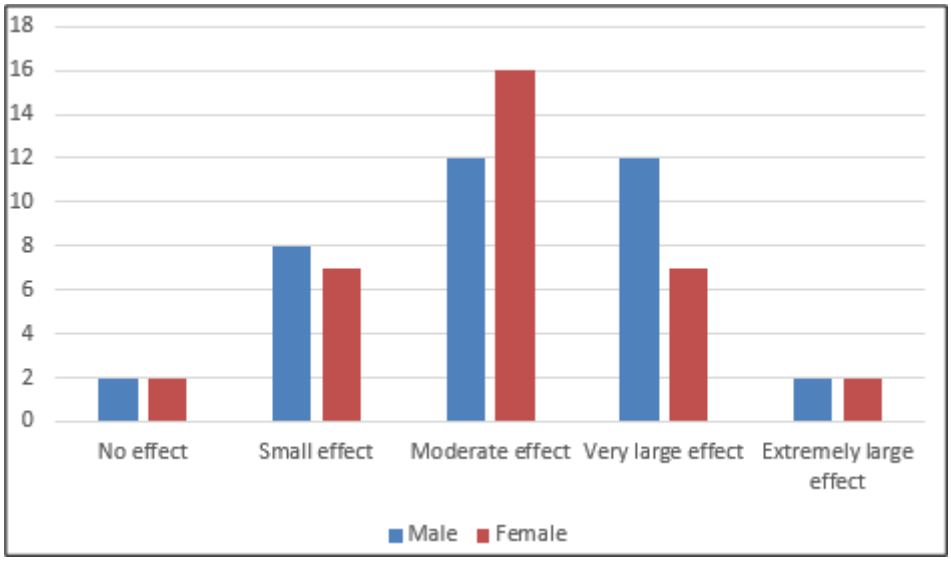

Figure 5: Gender-based DLQI scores in acne patients.

affects older individuals (82.14%). In contrast, Grade 3 peaks in late adolescence (36.36%), and Grade 4, the most severe, is mainly seen in older adults (87.5%). Overall, higher acne severity correlates with older age, while younger individuals experience more moderate to severe acne. The current study revealed that patients predominantly had mild acne, consistent with prior research indicating that mild acne is the most prevalent grade among adolescents in Nigeria (88.6%) and India (81.9%) (Okoro *et al.*, 2016; Sharma *et al.*, 2017). In contrast, a hospital-based study in Turkey found a greater occurrence of moderate to severe acne grades (67%) compared to mild grades (Eyüboglu *et al.*, 2018).

The treatment approaches in this study reflect the diverse strategies for managing acne vulgaris, tailored to its severity. Both topical and oral medications, often in combination, highlight a personalized treatment approach supported by existing research. Retinoids and antibiotics are proven effective in managing both the inflammatory and persistent aspects of acne (Kraft and Freiman, 2011). Acne vulgaris affects about 9% of the global population, with 85% of cases in those aged 12 to 24. Initial treatments typically involve topical retinoids, benzoyl peroxide, and azelaic acid. For severe cases, oral antibiotics like doxycycline, hormonal therapies, and isotretinoin are used (Eichenfield *et al.*, 2021). In this study, treatments included retinoids, antibiotics, fixed-dose combinations, supplements, antihistamines, and miscellaneous options. The Dermatology Life Quality Index (DLQI) revealed significant gender differences in acne's impact on quality of life, with both genders experiencing varying degrees of effect, underscoring the need for gender-sensitive treatment strategies. This study presents valuable insights into the prevalence, clinical manifestations, and treatment of acne vulgaris; however, several limitations must be considered. The sample size may be insufficient to draw definitive conclusions

across diverse populations, and patient recruitment biases could have influenced the results, potentially skewing the demographic representation. Future research should aim to include larger, more varied sample populations to enhance the generalizability of findings. Additionally, longitudinal studies would help assess the long-term effects of different treatment regimens on both clinical outcomes and quality of life. Exploring the psychological and social impacts of acne across diverse age groups and genders is essential to inform more personalized and effective treatment strategies.

CONCLUSION

In conclusion, this study reveals notable age and gender variations in the distribution and severity of acne vulgaris. Although both genders are affected, females aged 19-45 exhibit a slightly higher prevalence. Acne predominantly appears on the cheeks and forehead, with distinct lesion types observed between genders. Males tend to experience more severe scarring, particularly icepick and box scars. These results underscore the importance of individualized treatment strategies that take demographic factors into account, as they can significantly impact the psychological and social consequences of acne. To improve clinical outcomes, healthcare professionals should tailor treatment plans according to patient characteristics, lesion type, and scarring severity, ensuring more effective management and enhanced quality of life for patients.

ACKNOWLEDGEMENT

We are sincerely thankful to Department of Pharmacy, Sumandeep Vidyapeeth (Deemed to be University) for providing facilities to carry out the study.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

ABBREVIATIONS

ADA: Adapalene; **BPO:** Benzoyl peroxide; **CLIN:** Clindamycin; **DLQI:** Dermatology Life Quality Index; **NA:** Nicotinamide; **NADI:** Nadifloxacin; **TRE:** Tretinoin.

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Cite this article: Maheshwari RA, Makwana S, Sisara H, Rajput HS, Trivedi R, Sen AK, *et al*. Clinical Profiles, Prescription Trends, and Quality of Life in Young Adults with Acne Vulgaris: A Cross-Sectional Study in a Tertiary Care Teaching Hospital. J Young Pharm. 2025;17(2):463-9.