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Expert Perspectives on Clinical Practices and Treatment Preferences for Azelaic Acid and Combination Therapy in Various Dermatological Conditions in the Indian Setting

Manjula S* and Krishna Kumar M

Department of Medical Services, Micro Labs Limited, Bangalore, Karnataka, India

***Address for Correspondence**
Dr Manjula S, Department of Medical Services, Micro Labs Limited, Bangalore. Telephone no: (080) 22370451 E-mail Id: drmanjulas@gmail.com

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Abstract

Objective: To assess clinicians' perspectives on the management of melasma, acne vulgaris, and post-inflammatory hyperpigmentation (PIH) in Indian settings, with a focus on the use of azelaic acid and its combination with glycolic acid in various dermatological conditions.

Methods: This cross-sectional study was conducted using a 23-item questionnaire to gather perspectives from dermatologists across Indian settings. The survey focused on clinical experiences, physician preferences, and observations regarding the use of both monotherapy and combination therapy in managing pigmentary disorders and acne. Responses were analyzed using descriptive statistical methods.

Results: Among the 556 participants, approximately 48% indicated that a 10% concentration of azelaic acid is most commonly recommended in routine clinical practice. Around 62% of clinicians reported that acne associated with pigmentation is the primary indication for azelaic acid use. More than half (54.32%) of respondents recommended an optimal treatment duration of 6-8 weeks when using a combination of azelaic acid and glycolic acid for acne management. Nearly 55% rated the azelaic acid + glycolic acid combination as effective for treating post-acne pigmentation. A majority (70%) favored combining azelaic acid with oral antibiotics for mild to moderate papulopustular acne. About 58% noted that azelaic acid + glycolic acid therapy occasionally required the use of a moisturizer. Most respondents (75.18%) emphasized that dose escalation of azelaic acid in acne management should depend on individual skin sensitivity. Additionally, around 44% reported that, among newer formulations, azelaic acid face wash was the most recommended option.

Conclusion: This study highlights that dermatologists commonly prefer 10% azelaic acid cream for acne with pigmentation. A combination of azelaic acid and glycolic acid used for 6-8 weeks has shown excellent perceived efficacy in improving post-acne hyperpigmentation. Treatment decisions based on an individual's skin sensitivity, with face wash formulations, gained popularity, and short-term contact therapy was recommended initially.

Introduction

Disorders of pigmentation and follicular inflammation represent a significant dermatological burden, contributing to substantial psychosocial distress and a reduced quality of life across diverse populations.[1-4] Acne vulgaris affects approximately 9.4% of the global population, making it one of the most prevalent dermatological conditions.[5] A meta-analysis reported a global prevalence of 0.99% (95% CI: 0.67–1.46%) for hidradenitis suppurativa.[6] The prevalence of melasma and other pigmentary disorders varies widely across regions, ranging from about 1% in the general population to as high as 40% in high-risk groups, depending on factors such as skin type, ultraviolet exposure, and geographic location.[6]

In India, a multicentric study across four regions reported melasma in 331 patients with a mean age of approximately 37 years and a female-to-male ratio of 4:1. [6] Among Indian adults (>25 years), a large hospital-based study observed acne vulgaris in 0.74% of 24,056 patients. [7] Furthermore, post-inflammatory hyperpigmentation (PIH) is common in Indian populations, with over 70% of individuals younger than 35 years with a history of acne exhibiting residual pigmented lesions. [8] Melasma, PIH, and acne-related pigmentation are particularly prevalent in individuals with darker skin types, which constitute a substantial proportion of the Indian population. [8,9] The management of these conditions requires careful consideration of efficacy, safety, and tolerability, particularly given the propensity for PIH following inflammatory skin conditions in this demographic.

Azelaic acid emerges as a promising, versatile treatment for pigmentary disorders and acne in the Indian population, with a significant number of studies and expert consensus. The drug exerts its antibacterial activity by inhibiting cellular protein synthesis in both aerobic and anaerobic bacteria, particularly *Staphylococcus epidermidis* and *Propionibacterium acnes*. In aerobic organisms, it reversibly inhibits several oxidoreductive enzymes such as tyrosinase, mitochondrial respiratory chain enzymes, thioredoxin reductase, 5-α-reductase, and DNA polymerases. In anaerobic bacteria, it disrupts glycolysis. Additionally, azelaic acid improves acne vulgaris by normalizing keratinization and reducing microcomedo formation. [10]

The mechanism of action of glycolic acid involves targeted disruption of desmosomal (corneosomal) bonds in the outer stratum corneum, leading to reduced cohesion between corneocytes and enhanced exfoliation. This promotes controlled desquamation of the stratum disjunctum without compromising the integrity or barrier function of the skin.[11] Azelaic acid and glycolic acid together improve acne and hyperpigmentation by enhancing skin renewal, reducing bacterial load, and evening skin tone. [12-14]

This study aimed to gather the clinicians' experiences and

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preferences regarding azelaic acid monotherapy and combination therapy, which may provide insights into current clinical practices and help inform future treatment strategies for pigmentary disorders and acne management.

Methodology

Study Settings

A cross-sectional study was carried out among dermatologists involved in the management of a wide range of dermatological conditions in the major Indian cities from June 2024 to December 2024. The study was conducted after getting approval from Bangalore Ethics, an Independent Ethics Committee, which was recognized by the Indian Regulatory Authority, the Drug Controller General of India.

Study Participants

An invitation was sent to leading dermatologists in managing a wide range of dermatological conditions in the month of March 2024 for participation in this Indian survey. About 556 clinicians from major cities of all Indian states, representing the geographical distribution, shared their willingness to participate and provide necessary data.

Study Procedure

The questionnaire booklet titled AGILE study was sent to the clinicians who were interested in participating in the survey. The study questionnaire comprised 23 questions that assessed key aspects, including clinical practices, treatment preferences, and the use of azelaic acid and its combination with glycolic acid for various dermatological conditions. Reliability, as determined by a split-half test (coefficient alpha), was adequate but should be improved in future versions of the questionnaire. A study of criterion validity was undertaken to test the questionnaire and to develop methods of testing the validity of measures of Physicians' Perspectives. However, the extraneous variables in this include the clinician's experience, usage of the newer drugs, etc. The two criteria used were the doctors' perspectives from the clinical practice and the assessment of an external assessor and statistician. Clinicians had the option to skip questions as desired and were instructed to complete the survey independently, without peer consultation. Before participating in the survey, all respondents provided written informed consent.

Statistical analysis

Data were analyzed using descriptive statistics, with categorical variables summarized as frequencies and percentages. To visualize the distribution of the categorical variables, pie charts and bar charts were created using Microsoft Excel 2013 (version 2409, build 16.0.18025.20030).

Results

Out of 556 participants, 52% of the respondents indicated that 11-25 patients with melasma are treated monthly in their clinical practice. About 44% of respondents reported that 26-50 patients are treated with acne vulgaris monthly in clinical practice. Similarly, about 46% of the participants reported that 11-20 patients are treated for PIH in clinical practice monthly. About 48% of the participants reported that a 10% strength of azelaic acid is mostly preferred in day-to-day practice (Table 1).

The majority (60.97%) of participants indicated cream as their preferred azelaic acid formulation used in routine practice. About 62% reported that acne with pigmentation is the preferred indication for azelaic acid use (Table 2). More than half (63.85%) stated that they would sometimes consider recommending azelaic acid as part of a combination therapy. Approximately half (49.82%) indicated a preference for using the azelaic acid + glycolic acid combination in 26–50% of their patients. According to 54% of participants, the optimal treatment duration for this combination in acne management is 6 to 8 weeks (Figure 1), and 49% recommended the same duration for hyperpigmentation treatment.

The majority (62.95%) reported that they would sometimes recommend azelaic acid + glycolic acid for truncal acne treatment. About 55% of participants rated this combination as good for post-acne pigmentation (Figure 2), and around 70% favored azelaic acid combination therapy with oral antibiotics for mild to moderate papulopustular acne (Table 3). Nearly half (49.82%) indicated that they would sometimes recommend azelaic acid with oral minocycline or doxycycline in the management of hidradenitis suppurativa. Around 56% of respondents reported that patients should sometimes be advised on how to use azelaic acid + glycolic acid. About 58% indicated that azelaic acid + glycolic acid therapy sometimes required the use of a moisturizer (Table 4).

Table 1: Distribution of responses on the most preferred strength of azelaic acid in day-to-day practice

Strength (%)	Response rate (n = 556)
10	47.66%
15	21.4%
20	30.94%

Table 2: Distribution of responses on preferred indication for azelaic acid

Indication	Response rate (n = 556)
Acne	4.32%
Melasma and PIH	30.22%
Acne with pigmentation	62.41%
All of the above	3.06%

Table 3: Distribution of responses on the recommendation of azelaic acid in mild to moderate papulopustular acne

Treatment approach	Response rate (n = 556)
Monotherapy	9.89%
Combination therapy with oral antibiotics	69.6%
Maintenance therapy	20.5%

Table 4: Distribution of responses on the requirement for moisturiser use during azelaic acid + glycolic acid therapy

Response	Response rate (n = 556)
Yes	23.2%
No	18.35%
Sometimes	58.27%

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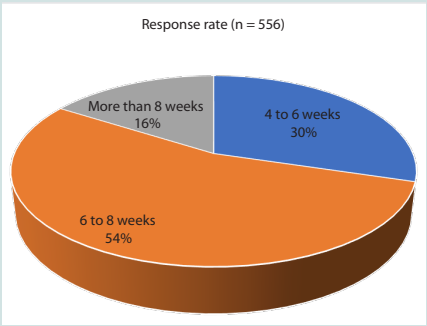

Figure 1: Distribution of response on recommendation for optimal duration of azelaic acid + glycolic acid therapy in acne.

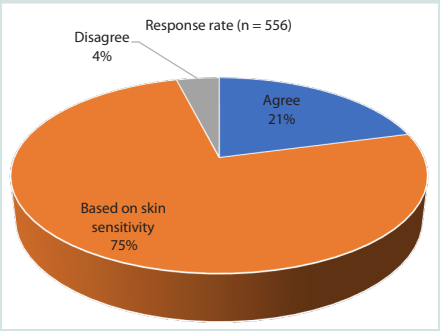

Figure 3: Distribution of responses on agreement with the recommendation of dose escalation of azelaic acid in the management of acne

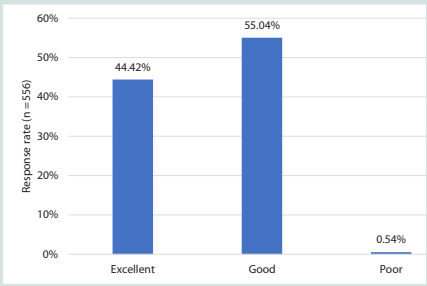

Figure 2: Distribution of responses on opinion regarding azelaic acid + glycolic acid in post-acne pigmentation

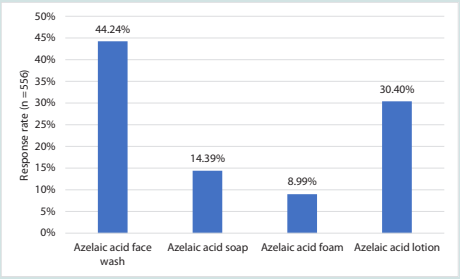

Figure 4: Distribution of responses on the recommendation of new formulations

More than half (53.6%) of the experts reported that they would sometimes recommend topical azelaic acid + glycolic acid for the treatment of keratosis pilaris. However, for lentigo maligna, 53% of participants indicated that they would not recommend the topical azelaic acid + glycolic acid combination. Approximately 53% reported that azelaic acid + glycolic acid prescriptions were sometimes altered by seasonal changes or geographical location. The majority (75.18%) emphasized that azelaic acid dose escalation in acne management should be based on skin sensitivity (Figure 3).

Nearly 44% of respondents reported that, among new formulations, azelaic acid face wash was the most recommended option (Figure 4). A substantial majority (67.09%) of participants advised patients to use short-term contact treatment when applying azelaic acid + glycolic acid for the first time. Based on clinical experience, 48% of respondents reported that only 11–20% of patients with hyperpigmentation completed the prescribed course of therapy.

Discussion

The predominant use of 10% azelaic acid cream suggests that it is well-tolerated and effective for routine dermatological practice, making it a suitable first-line formulation for acne and pigmentation disorders. In addition, the azelaic acid face wash was identified as a promising new formulation, reflecting a shift toward more convenient, cosmetically acceptable, and better-tolerated options that may enhance patient adherence. Evidence from clinical studies supports these observations. Ivona Tomić et al. compared the efficacy of a 10% azelaic acid nanocrystal hydrogel with a 20% azelaic acid cream for acne treatment and found a treatment success rate of 36.51% for the 10% nanocrystal hydrogel, compared to 30.37% for the 20% cream. [15] Similarly, Anil Kumar et al. reported that most commercially available topical formulations contain azelaic acid concentrations ranging between 15% and 20%, indicating variability in practice but growing recognition of lower concentrations as effective and well-tolerated options.[16] In a previous study, it was observed that the azelaic acid face wash formulation was commonly preferred by dermatologists (48% of respondents) for the treatment of mild-to-moderate papulopustular acne.[17]

The preference for azelaic acid in acne with pigmentation underscores its unique advantage in targeting both inflammatory lesions and PIH, making it particularly valuable for patients with darker skin types who are more prone to PIH. Supporting evidence from Heather Woolery-Lloyd et al. demonstrates that azelaic acid exhibits anti-tyrosinase activity, reduces inflammation, and effectively manages both acne lesions and residual pigmentation. [18] Furthermore, in a previous survey conducted by the current authors, approximately 37% of experts recommended a 20% daily concentration as optimal for managing acne and associated pigmentation disorders.[19] Similarly, Archana Rede et al. reported favorable outcomes with this combination, particularly among individuals with darker skin, showing a significant reduction in inflammatory lesions.[20] According to Kircik et al., azelaic acid inhibits melanocyte activity and reduces hyperpigmentation, while glycolic acid complements this action by promoting exfoliation and enhancing skin renewal.[21]

In this study, a consensus that around a 6-8-week treatment duration and the use of short-contact therapy during initiation

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highlight the importance of balancing therapeutic benefit with cutaneous tolerability. In line with these findings, a previous survey involving 467 dermatologists reported that 56% recommended a 6-8-week regimen, and 66% preferred the azelaic acid–glycolic acid combination for acne therapy.[19] Similarly, Spellman et al. reported in a 12-week clinical study that this combination led to a significantly greater reduction in inflammatory lesions compared to other treatment options. [12]

Approximately 70% of dermatologists supported combining azelaic acid with oral antibiotics for managing mild-to-moderate papulopustular acne, reflecting its established role within multi-modal therapeutic regimens. Evidence from Pazoki-Toroudi et al. demonstrated that a formulation containing 5% azelaic acid and 2% erythromycin led to a significant reduction in papules, pustules, and comedones compared with monotherapy.[22] Similarly, Gollnick et al. demonstrated that combining 20% azelaic acid cream with oral minocycline resulted in an 88% reduction in papules and pustules and complete resolution of deep inflammatory lesions.[23] Further evidence from Pazoki-Toroudi et al. confirmed enhanced therapeutic outcomes when azelaic acid was combined with clindamycin.[24]

Many participants noted that the use of azelaic acid and glycolic acid combinations often required the concurrent use of a moisturizer to minimize irritation, and the majority emphasized that dose escalation of azelaic acid in acne management should be guided by individual skin sensitivity. Supporting evidence aligns with these observations. Guevara et al. reported that in a melasma study, 53% of patients required a moisturizer after eight weeks of treatment with a glycolic acid–based cream.[25] Similarly, Kakita et al. observed that patients using azelaic acid and glycolic acid combinations experienced slightly higher incidences of peeling, burning, stinging, and dryness compared to other therapies.[13] Rosso et al. further emphasized that moisturizers help alleviate these side effects and support skin barrier maintenance.[26] Moreover, the Guidelines of Care for the Management of Acne Vulgaris by Reynolds et al. emphasized that azelaic acid is particularly suitable for individuals with sensitive skin, underscoring the need for flexible dosing and adjustments based on local irritation and formulation tolerability.[27]

The key strength of this study is its large sample size of 556 dermatologists, providing a comprehensive overview of clinical preferences and perceived efficacy for azelaic acid and its combinations. It offers valuable insights into formulation choices, dosage preferences, and treatment practices across various dermatological conditions. The inclusion of comparative and literature-based evidence further enhances its clinical relevance. However, the study's limitations include reliance on self-reported data, which may introduce response bias, and the absence of patient-level clinical outcomes. Additionally, the survey did not account for regional variations or long-term efficacy and safety data of the evaluated formulations.

Conclusion

This survey highlights current trends in managing pigmentary disorders and acne in India. Dermatologists predominantly use 10% azelaic acid cream, especially for acne with pigmentation. The azelaic acid + glycolic acid combination, used for 6-8 weeks, has shown excellent perceived efficacy in improving post-acne hyperpigmentation. Combination therapy with oral antibiotics is preferred for mild-to-moderate papulopustular acne. Dose escalation and moisturizer use are individualized based on skin sensitivity. Face wash formulations gain increasing acceptance, and short-contact therapy is commonly advised for first-time users to improve tolerability.

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Conflict of interest

None declared

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