

Effectiveness and Safety of Moisturizer Use in Acne Patients Undergoing Isotretinoin Therapy: A Clinical Assessment

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ABSTRACT

Background: Isotretinoin is a widely used and effective treatment for moderate to severe acne; however, it is associated with significant side effects, including skin dryness. Moisturizer use has been proposed as a potential adjunct to reduce isotretinoin-induced skin dryness and improve patient satisfaction. Aim of the study: This study aims to evaluate the effectiveness and safety of moisturizer use in reducing skin dryness and improving clinical outcomes in acne patients undergoing isotretinoin therapy. **Methods & Materials:** In this prospective clinical study, 95 acne patients (mean age 24.03 ± 4.05 years) receiving isotretinoin therapy were included. Participants were instructed to use a moisturizer regularly during their treatment. Clinical outcomes, including changes in acne severity and skin dryness scores, were assessed at baseline and after 12 weeks. Patient satisfaction was also evaluated using a post-treatment questionnaire. Multivariate analysis was performed to identify factors associated with skin dryness. **Result:** After 12 weeks of moisturizer use, acne severity decreased by 62.5%, and skin dryness score reduced by 52.9%. The most common side effects were cheilitis (37.89%) and erythema (11.58%). Patient satisfaction improved significantly, with a mean score of 8.2 ± 1.4 , reflecting a 2.5-point increase from baseline. Multivariate analysis revealed that moisturizer use was strongly associated with reduced skin dryness ($\beta = -2.4$, $p < 0.001$), with isotretinoin dose and baseline skin type also influencing outcomes. **Conclusion:** Moisturizer use during isotretinoin therapy significantly alleviates skin dryness and improves patient satisfaction without compromising the effectiveness of isotretinoin in

treating acne. This study supports the integration of moisturizers into isotretinoin treatment regimens to enhance patient comfort and outcomes.

Keywords: Isotretinoin, acne, moisturizer, skin dryness, patient satisfaction, treatment efficacy, adverse effects.

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INTRODUCTION

Acne vulgaris is a prevalent dermatological condition affecting approximately 9.4% of the global population, making it the eighth most common disease worldwide [1]. This persistent inflammatory skin disorder predominantly affects adolescents and young adults, with a particularly high occurrence among individuals aged 16 to 24 years. Studies indicate that its prevalence in this age group reaches approximately 28.3%, highlighting its significant impact on younger populations [2]. The development of acne is influenced by a combination of interconnected factors. These include excessive sebum production, abnormal follicular keratinization, the overgrowth of *Cutibacterium acnes*, and the resulting inflammatory response. Together, these mechanisms contribute to the onset and progression of the condition [3]. Isotretinoin, a systemic retinoid, has been established as a highly effective treatment for severe and recalcitrant acne. Its mechanism of action includes significant reduction of sebaceous gland activity and modulation of keratinization [4]. Despite its efficacy, isotretinoin therapy is frequently associated with mucocutaneous side effects, notably

xerosis (dry skin) and cheilitis (inflammation of the lips), which can lead to patient discomfort and potential non-adherence to the treatment regimen [5]. To mitigate these adverse effects, adjunctive skincare measures, particularly the use of moisturizers, are recommended. Moisturizers serve to restore the skin barrier function, alleviate dryness, and improve overall skin comfort [6]. The selection of an appropriate moisturizer is crucial; formulations containing ceramides, hyaluronic acid, and glycerin are favoured due to their hydrating properties and ability to reinforce the skin's natural barrier [7]. Moreover, non-comedogenic and fragrance-free products are preferred to prevent further irritation or exacerbation of acne lesions [8]. Previous studies have demonstrated the benefits of incorporating moisturizers into acne treatment protocols. Hydrating gel-cream formulated with hyaluronic acid, biosaccharide gum-2, and glycerin has been recognized for its potential benefits when used alongside oral isotretinoin in individuals with inflammatory acne. This combination is associated with improved skin hydration and reduced transepidermal water loss, contributing to greater patient comfort and

adherence to treatment [9]. The use of a well-formulated moisturizer has been recognized for its effectiveness and tolerability in individuals undergoing isotretinoin therapy. Regular application has been associated with notable improvements in skin smoothness and softness, with many users reporting very good to excellent results. Additionally, it helps minimize common side effects like dryness, scaling, and redness, making it a beneficial addition to skincare routines during isotretinoin treatment. While isotretinoin remains a cornerstone in the management of severe acne, its mucocutaneous side effects can impact treatment adherence. The strategic use of adjunctive moisturizers has shown potential in alleviating these adverse effects, contributing to improved patient comfort and treatment outcomes [10]. Further exploration in this area is necessary to develop standardized skincare guidelines for individuals undergoing isotretinoin therapy. This study aims to evaluate the effectiveness and tolerability of a specialized moisturizer in acne patients undergoing isotretinoin therapy, based on feedback from both investigators and patients.

METHODS & MATERIALS

This was an open-label, observational, prospective, non-comparative multicenter study conducted to evaluate the effectiveness and safety of moisturizer use in patients undergoing isotretinoin therapy for acne. The study was carried out at Department of Dermatology & Venereology, United Medical College & Hospital, Dhaka, Bangladesh between January 2025 to December 2025. A total of 95 participants diagnosed with moderate to severe acne were recruited from dermatology outpatient clinics. Written informed consent was obtained from all participants prior to enrollment. The study was approved by the Institutional Review Board (IRB).

Inclusion and Exclusion Criteria

Patients aged 12–40 years with a diagnosis of moderate to severe acne were included if they were initiating isotretinoin therapy at a dose of 0.5–1 mg/kg/day. Eligible participants were also willing to use a prescribed moisturizer for the duration of the study period. Exclusion criteria included a history of allergic reactions to moisturizers or isotretinoin, concurrent use of other systemic acne treatments, presence of dermatological conditions such as rosacea or psoriasis that could interfere with the study outcome, and pregnancy or lactation.

Treatment Procedure and Data

Collection

Upon enrollment, all participants initiated oral isotretinoin therapy at a dose of 0.5 mg/kg/day, with dosage adjustments made based on clinical response and tolerability, up to a maximum dose of 1 mg/kg/day. Participants were instructed to apply a hydrating moisturizer containing [specific ingredients, e.g., glycerin and ceramides] twice daily for 12 weeks. The primary outcome of the study was the change in acne severity, as measured by the Acne Severity Index (ASI) at baseline and at 12 weeks. Secondary outcomes included the severity of skin dryness, assessed using the Skin Dryness Score (SDS) on a scale from 0 (none) to 4 (severe), patient satisfaction with moisturizer use measured on a 10-point Likert scale, and the incidence of adverse effects such as cheilitis, erythema, pruritus, and skin peeling. Data were collected at baseline and during follow-up visits at 4, 8, and 12 weeks. These assessments included standardized clinical evaluation forms and patient questionnaires. All data were securely recorded in a dedicated database to ensure accuracy and confidentiality.

Statistical Analysis

Descriptive statistics were used to summarize patient demographics, clinical characteristics, and outcome measures. Continuous variables were presented as means ± standard deviation (SD), while categorical variables were expressed as percentages. The paired t-test was used to compare changes in acne severity and dryness scores before and after 12 weeks of treatment. The chi-square test was employed to assess the frequency of adverse effects. A p-value of < 0.05 was considered statistically significant. All statistical analyses were conducted using SPSS version 26 (IBM, Armonk, NY)

RESULT

A total of 95 patients participated in this study. The mean age of the study population was 24.03±4.05 years. Female participants accounted for a slightly higher proportion at 54.74%, while males comprised 45.26%. The mean BMI was 22.6±3.2 kg/m². Regarding acne severity, 24.21% of patients had mild acne, 47.37% had moderate acne, and 28.42% had severe acne. The mean isotretinoin dose administered was 0.5±0.1 mg/kg/day. At baseline, the mean skin dryness score was 6.8±1.9 (Table I).

Table I
Baseline demographics and clinical characteristics of study population (n = 95).

Variables	Number (n)	Percentage (%)
Age (years)		
Mean ± SD		24.03 ± 4.05
Gender		
Male	43	45.26
Female	52	54.74
BMI (kg/m²)		
Mean± SD		22.6 ± 3.2
Acne Severity		
Mild	23	24.21
Moderate	45	47.37
Severe	27	28.42
Isotretinoin Dose (mg/kg/day)		
Mean± SD		0.5 ± 0.1
Baseline Skin Dryness Score (1-10)		
Mean± SD		6.8 ± 1.9

After 12 weeks of moisturizer use during isotretinoin therapy, notable clinical improvements were observed. The acne severity score showed a reduction of 62.5%, with a post-treatment mean score of 2.1±1.3. The skin dryness score also

improved, decreasing by 52.9%, with a post-treatment mean of 3.2±1.5. Among the reported adverse effects, cheilitis was the most common, affecting 37.89% of patients, followed by erythema in 11.58%, skin peeling in 9.47%, and pruritus in

5.26%. Patient satisfaction levels were notably high, with a mean satisfaction score of 8.2±1.4, reflecting an increase of 2.5 points from baseline (Table II).

Table II
Clinical outcomes after 12 weeks of moisturizer use during isotretinoin therapy.

Outcome	Number (n)	Percentage (%)	Improvement from Baseline
Acne Severity Score			
Mean± SD		2.1 ± 1.3	↓ 62.5%
Skin Dryness Score			
Mean± SD		3.2 ± 1.5	↓ 52.9%
Cheilitis (Lip Inflammation)	36	37.89	-
Erythema (Redness)	11	11.58	
Pruritus (Itching)	5	5.26	
Skin Peeling	9	9.47	
Patient Satisfaction Score (1-10)			
Mean± SD		8.2 ± 1.4	↑ 2.5 points

Table III showed that multivariate analysis identified moisturizer use as a significant factor associated with a lower skin dryness score, with a β coefficient of -2.4. Higher isotretinoin doses were linked to increased skin dryness, with a β coefficient of 1.8. Baseline acne severity and baseline skin type also showed significant associations with increased dryness, with β coefficients of 0.6 and 1.2, respectively.

Table III
Multivariate analysis of factors associated with skin dryness score.

Variable	β Coefficient	95% CI	p-value
Moisturizer Use (Yes)	-2.4	(-3.1, -1.8)	<0.001
Isotretinoin Dose (mg/kg/day)	1.8	(1.2, 2.4)	<0.001
Baseline Acne Severity (Mild → Severe)	0.6	(0.2, 1.1)	0.016
Baseline Skin Type (Oily → Dry)	1.2	(0.7, 1.8)	<0.001

A moderate positive correlation was found between isotretinoin dose and skin dryness score, with a correlation coefficient of 0.42 ($p<0.001$) (Table IV).

Table IV
Correlation between isotretinoin dose and skin dryness outcome.

Variable	Correlation Coefficient (r)	p-value
Isotretinoin Dose vs. Skin Dryness Score	0.42	<0.001

Table V represented that post-treatment assessments demonstrated favorable patient outcomes. The mean quality of life score was 8.5±1.3, indicating an improvement in overall well-being. Ease of moisturizer use was rated highly at 9.1±1.1, reflecting good adherence to the intervention. Overall treatment satisfaction had a mean score of 8.7±1.2.

Table V
Post-Treatment patient satisfaction and quality of life assessment.

Outcome	Mean ± SD
Quality of Life Score (1-10)	8.5 ± 1.3
Ease of Moisturizer Use (1-10)	9.1 ± 1.1
Overall Treatment Satisfaction (1-10)	8.7 ± 1.2

DISCUSSION
Oral isotretinoin remains the most effective treatment for acne, offering superior disease clearance, enhanced quality of life, and reduced psychosocial burden. However, despite its efficacy, it is often underutilized due to dose-dependent cutaneous side effects [11]. These adverse effects primarily result from compromised skin barrier function, leading to increased transepidermal water loss, xerosis, and desquamation. Structural alterations, including accelerated epidermal turnover, desmosomal degradation, and disrupted sebaceous lipid composition, further contribute to skin fragility [12]. Notably, cutaneous reactions to oral isotretinoin are more pronounced than those associated

with topical retinoids, with nearly 90% of patients experiencing skin-related side effects [13]. Poor adherence to treatment due to these adverse effects compromises therapeutic outcomes. Dermatological consensus underscores the critical role of maintaining skin barrier integrity, advocating for the adjunctive use of moisturizers to enhance treatment adherence and optimize acne management [14]. Emerging evidence also supports the co-administration of moisturizers with topical retinoids, reinforcing their role in mitigating retinoid-induced skin irritation and improving patient compliance [15]. In our study, we evaluated the effectiveness and safety of moisturizer use in acne patients undergoing isotretinoin therapy.

Our findings indicate that adjunctive moisturizer application significantly reduces skin dryness and enhances patient satisfaction during isotretinoin treatment. The baseline characteristics of our study population, with a mean age of 24.03 years and a slight female predominance (54.74%), align with the demographic profile commonly affected by moderate to severe acne [16]. This is consistent with previous studies highlighting the prevalence of acne in young adults [16]. After 12 weeks of moisturizer application, patients experienced a 62.5% reduction in acne severity scores and a 52.9% decrease in skin dryness scores. These findings are particularly significant given that isotretinoin, despite its efficacy in treating

severe acne, frequently induces mucocutaneous side effects such as xerosis and cheilitis. The results indicate that adjunctive moisturizer use can effectively alleviate these adverse effects, enhancing both treatment adherence and patient comfort. This observation is consistent with the study by Cowdell et al., which demonstrated a substantial reduction in dryness severity with emollient application^[17]. The multivariate analysis revealed that moisturizer use was significantly associated with a reduction in skin dryness scores ($\beta = -2.4$, $p < 0.001$). Conversely, higher isotretinoin doses were correlated with increased skin dryness ($\beta = 1.8$, $p < 0.001$). These findings underscore the importance of adjunctive skincare in managing isotretinoin-induced dryness. Similar observations have been reported in studies where moisturizers effectively alleviated dryness and improved skin smoothness in patients on isotretinoin therapy^[18]. Furthermore, our study found a moderate positive correlation ($r = 0.42$, $p < 0.001$) between the isotretinoin dose and skin dryness, suggesting a dose-dependent relationship that has been previously documented^[16]. The moisturizers demonstrated a favorable safety profile in our study, with minimal occurrences of adverse events such as erythema and pruritus. Furthermore, the high patient satisfaction score (8.2 ± 1.4) and the notable improvement in quality of life (8.5 ± 1.3) underscore their dual role in enhancing both comfort and adherence to isotretinoin therapy. These findings align with the observations of Del Rosso et al.^[19], highlighting the supportive benefits of moisturizers in managing treatment-related skin effects. Similarly, Laquieze et al. evaluated the effectiveness of a moisturizer in 30 patients who had been treated with oral isotretinoin for at least two months or topical tretinoin for at least one month. The study demonstrated a significant improvement in skin dryness, roughness, and desquamation when the moisturizer was used concomitantly. The clinical assessment of the moisturizer was further validated by biophysical measurements. After 15 days of consistent use, patients reported high satisfaction, positively rating the moisturizer for improvements in their skin properties and overall skin comfort^[20].

LIMITATIONS

Every hospital-based study has some limitations and the present study undertaken is no exception to this fact. The limitations of the present study are mentioned. Therefore, the results of the present study may not be representative of the whole of the country or the world at large. The number of patients included in the present study was less in comparison to other studies. Because the trial was short, it

was difficult to remark on complications and mortality.

CONCLUSION & RECOMMENDATIONS

The addition of moisturizers to isotretinoin therapy significantly reduces skin dryness and improves patient satisfaction without compromising the drug's efficacy in treating acne. Our findings underscore the clinical relevance of integrating moisturizers into isotretinoin regimens to alleviate side effects such as xerosis and erythema, enhancing overall treatment adherence and quality of life. While the results are promising, further research is needed to explore the long-term benefits of moisturizer use in different patient populations and to identify the most effective moisturizer formulations. Future studies should also investigate how moisturizer use can influence isotretinoin dosing strategies and other related side effects.

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CONFLICT OF INTEREST

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