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## To study clinical trial comparing adapalene and tazarotene, two topical retinoids for acne vulgaris

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### Abstract

**Introduction and objectives:** Acne vulgaris is a very prevalent skin condition, especially among teenagers. Although there is no immediate danger to one's life, acne can lead to significant discomfort. This study aims to examine the effectiveness of two topical acne treatments: adapalene and tazarotene.

**Materials and Methods:** For the aforementioned study, 80 patients of either sex were enrolled and randomly assigned. It was an open, prospective, single-blind, randomised clinical experiment. It was conducted from July 2013 to August 2014 at Department of Dermatology, Maharajah's Institute of Medical Sciences, Nellimarla, Vizianagaram, Andhra Pradesh, India.

**Results:** There was a larger decrease in both inflammatory and non-inflammatory acne lesions, and patients in this group had a moderate to good response. After 4 weeks, acne lesions had reduced by 25% and by 8 weeks, they had reduced by 60%. A moderate to good response was noted at the conclusion of the 12-week therapy period, with a reduction of 80.3%. Only a small percentage of participants experienced the potential side effects, which included skin peeling, redness, irritation, dryness, and itching. In comparison to topical 0.1% tazarotene cream, their side effects were minor and short-lived. Both patient compliance and treatment outcomes were positively impacted by the topical 0.1% adapalene cream. Regular and proper care was provided by patients.

**Conclusion:** Acne vulgaris was more common in men than females in this study. In both sexes, the incidence was highest in those between the ages of 15 and 20. Acne vulgaris was found to be quite common among students in this study.

**Keywords:** Acne vulgaris, students, adapalene, tazarotene, retinoids

### Introduction

The incidence of Acne Vulgaris, a skin condition, is particularly high in teenagers. Although acne does not usually pose a serious health risk, it can lead to significant discomfort and even illness [1]. A person's mental health may be negatively affected by acne and its scarring, leading to feelings of rage, social isolation, low self-esteem, and diminished self-image. Psychological impacts are felt by even the most acne-free individuals, and for those, the psychological and social toll may be the worst part of dealing with acne. Among teenagers, even mild to moderate acne is linked to an increased risk of depression and thoughts of suicide compared to other debilitating skin conditions. In conclusion, acne is a serious medical issue that requires prompt treatment to avoid psychological effects, scarring, and poor social functioning [2, 3].

Acne vulgaris has been treated with a plethora of new topical and systemic medications in the past quarter of a century. Even though they aren't apparent to the human eye, the microcomedones are the main acne lesions that need extra care while formulating treatment plans. These lesions serve as the foundation for future inflammatory macules, papules, and pustules, or non-inflammatory comedones. Vitamin A is the source of retinoids. Since their discovery in 1962, they have been known to be quite helpful in clearing up acne [4-6].

By influencing the turnover of follicular epithelial cells, retinoids are able to reverse the aberrant desquamation. This is because they control cell proliferation and differentiation. This prevents new microcomedones from forming and causes older comedones to be expelled. By preventing hypercornification, the microclimate in the pilosebaceous follicle is changed, creating an aerobic environment that is unfriendly to *P. acnes*. This, in turn, presumably improves the penetration of other topical medications. Research has shown that topical retinoids can directly reduce inflammation, both *in vitro* and *in vivo* [7, 8].

In addition, retinoids influence the levels of transcription factors like AP-1, which control the inflammatory response-related gene expression of growth factors and degradation enzymes.

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There are a number of processes, some of which are related to or separate from the binding of retinoid receptors, by which retinoids induce cell death. The findings provide theoretical support for and further information on the mechanisms by which different formulations of adapalene, tretinoin, and tazarotene have been shown to significantly reduce inflammatory lesions in well-controlled clinical trials. Retinoids have a dose-dependent effect on microcomedone development and number reduction, as well as on non-inflammatory and inflammatory lesions. Retinoids, whether used topically as monotherapy or in combination with other treatments and maintenance treatments, are thus beneficial for the majority of acne patients [7-9].

Nowadays, topical retinoids are not only utilised as a maintenance treatment but also as a first-line treatment for the majority of acne types. With the rise of P.acnes bacteria that are resistant to antibiotics, topical retinoids may help reduce the need for these drugs to treat acne. Because of this, we need a systematic review to find out whether topical retinoids are effective and safe for treating acne [9, 10].

The primary objective of this research is to determine whether topical adapalene or tazarotene is more effective in treating acne vulgaris.

**Materials and Methods**

For the aforementioned study, a total of 80 patients, regardless of gender, were recruited and allocated randomly. The study was an open, prospective, single-blind, randomised clinical trial. The study took place between July 2013 to August 2014 at Department of Dermatology, Maharajah’s Institute of Medical Sciences, Nellimarla, Vizianagaram, Andhra Pradesh, India.

**Inclusion Criteria**

Acne vulgaris patients ranging from mild to moderate

**Exclusion Criteria**

- Expectant and Nursing Mothers
- Allergy to drugs
- Children under the age of twelve

**Results**

The current investigation yielded the following findings. There were 55 men and 25 females among the 80 patients that were part of the research. Their ages ranged from fifteen to twenty-nine. While some of the patients were employees or housewives, 73 were students. Thirty percent of patients had a history of using these products topically. Topical treatment was last applied anywhere from six months to three years ago. Antibiotics administered systemically were used to treat 10% of patients. No one was treated with systemic retinoid. Some patients did not have access to information regarding topical application details.

**Table 1:** Distribution of Sexual Characteristics

Sr. No.	Gender	Patients
1.	Male	55
2.	Female	25
Total		100

Table 1 shows that the prevalence of acne vulgaris was higher in males (55 cases) compared to females (25 cases) in this study.

**Table 2:** Age wise Distribution

Sr. No.	Age	Male (N-55)	Female (N-25)
1.	15-20	29	12
2.	21-25	21	10
3.	26-29	5	3

The age range of 15 to 20 years old, regardless of sex, had the highest prevalence, according to the age distribution. The age range of the 31st is 21–25.

**Table 3:** Distribution based on occupation

Occupation	Male (55)	Female (25)
Students	35	18
Other Occupation	15	6
Unemployed	5	-
Housewives	-	1

Table 3 shows that the highest number of cases of acne vulgaris, 53, were among students in the aforementioned study.

**Table 4:** Risk factors linked to acne vulgaris

Sr. No.	Factors	Male (55)	Female (25)
1.	Summer Exacerbation	10	2
2.	Stress	20	13
3.	Premenstrual Flare	-	12
4.	Smoking	25	-

Here are the elements that have been found to be related with acne vulgaris: stress (23), premenstrual flare (12), summer flare (12), and smoking (25).

**Table 5:** Acne vulgaris and associated skin conditions

Sr. No.	Diseases	Male (55)	Female (25)
1.	Pityriasis versicolor	10	10
2.	Vitiligo	20	-
3.	Polymorphic light eruption	10	10
4.	Seborrhoeic dermatitis	15	5

Adapalene therapy resulted in a moderate to good response. After around six weeks, 42% of the lesions remained. After eight weeks, 60% of the lesions had diminished. After 12 weeks, an impressive 80.3% reduction had been achieved.

**Discussion**

Among the many reasons of distress among adolescents, acne vulgaris-the "Stigma of Adolescence"-ranks first. Doctors' recommendations go unheeded by many patients. Although their ailment may have been moderate, many teens who are self-conscious about their appearance and who are getting married soon came for therapy. There is a clear association between greater sebaceous activity and the higher incidence of acne among students, as shown in this study. Thirteen percent of individuals have a history of acne vulgaris in their family [11-13].

It has been established that acne can have a hereditary component. Fifteen percent of female patients reported an episode just before their period, which is thought to be caused by a shift in the pilosebaceous epithelium's moisture levels just before menstruation. It has been noted that acne lesions tend to worsen during times of physical and emotional stress, as well as during the summer. Reduced sebum production, normalized ductal keratinization, decreased propionibacterium acnes colony size, and inhibition of inflammatory mediator release

are the primary goals of acne therapy [14, 15].

There was a larger decrease in both inflammatory and non-inflammatory acne lesions, and patients in this group had a moderate to good response. After 4 weeks, acne lesions had reduced by 25% and by 8 weeks, they had reduced by 60%. A moderate to good response was noted at the conclusion of the 12-week therapy period, with a reduction of 80.3%. Only a small percentage of participants experienced the potential side effects, which included skin peeling, redness, irritation, dryness, and itching. In comparison to topical 0.1% tazarotene cream, their side effects were minor and short-lived. Both patient compliance and treatment outcomes were positively impacted by the topical 0.1% adapalene cream. Regular and proper care was provided by patients. Only a small percentage of patients experienced side effects; the vast majority did not [16-18].

Inflammatory and non-inflammatory lesions exhibited a moderate response in this group of patients. In this study, the adverse effects were quite severe. During the first week of treatment, the majority of patients experienced erythema, scaling, and dryness. When contrasted with topical adapalene, the duration and severity of the side effects in this group were significantly longer. There was a 7% decrease after 4 weeks of therapy. After 12 weeks, the total decrease was 50.04 percent [19-21].

There is prior notice in the literature of the same side effects observed in this investigation. Topical 0.1% adapalene cream often improves the acne lesions to a moderate to good degree. There was a little improvement and greater negative effects with topical treatment using 0.1% tazarotene. This study did not find the overall improvement that has been reported in the literature while using topical 0.1% tazarotene [22-25].

Topical adapalene cream was found to have much less negative effects than topical tazarotene cream, according to prior investigations carried out at different research centres and institutes. Studies have shown that compared to adapalene, tazarotene leads to a far higher percentage of patients seeing a 50% or greater improvement. Here, however, adapalene was linked to a far higher rate of patients showing considerable improvement [26-29].

## Conclusion

Males exhibited a higher prevalence of Acne Vulgaris in this study. Regardless of sex, the higher incidence was observed in the 15–24 age bracket. The prevalence of acne vulgaris among the students in this study was quite high. Precipitating factors were more commonly observed in male patients in this investigation. There was a significant difference in the response rates between patients treated with 0.1% tazarotone cream and those treated with 0.1% adapalene cream. People in the 15–20 age range showed the best improvement after using topical adapalene cream or topical tazarotene cream. After 10 weeks of treatment, topical adapalene cleared up over 75% of the lesions, while topical tazarotene cleared up just 30%. While topical tazarotene had serious and long-lasting side effects, topical adapalene cream had extremely minor and short-lived ones.

## Funding

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## Conflict of Interest

None

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