

## Impact on quality-of-life: before and after topical combinational treatment in patients of acne vulgaris

Vijay K. Sehgal<sup>1\*</sup>, Jasleen Kaur<sup>1</sup>, Surinder Pal Singh<sup>2</sup>, Anita K. Gupta<sup>1</sup>

<sup>1</sup>Department of Pharmacology, Government Medical College, Patiala, Punjab, India,

<sup>2</sup>Department of Dermatology & Venereal Diseases, Government Medical College, Rajindra Hospital, Patiala, Punjab, India

**Received:** 10 July 2014

**Accepted:** 08 August 2014

**\*Correspondence to:**

Dr. Vijay Sehgal,  
Email: sehgalvijayk@gmail.com

**Copyright:** © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

### ABSTRACT

**Background:** The objective was to study quality-of-life in patients of acne vulgaris before and after treatment by benzoyl peroxide 2.5% gel and clindamycin 1% gel or benzoyl peroxide 2.5% gel and nadifloxacin 1% cream or tretinoin 0.025% and clindamycin 1% gel.

**Methods:** This was a prospective, open, randomized, parallel comparative study of 60 patients of acne vulgaris attending the Department of Dermatology and Venereal Diseases, Government Medical College, Rajindra Hospital, Patiala. Three groups were made 20 in each group, one group received benzoyl peroxide 2.5% gel and clindamycin 1% gel, the second group received benzoyl peroxide 2.5% gel, and nadifloxacin 1% cream and the third group received tretinoin 0.025% and clindamycin 1% gel. Cardiff acne disability index questionnaire was filled before starting and after the treatment.

**Results:** In these three groups, it was found that the group on benzoyl peroxide 2.5% gel and clindamycin 1% gel, mean score, before starting treatment was 8.35±3.48 and after treatment was 2.95±2.09 (p<0.001), group on benzoyl peroxide 2.5% gel and nadifloxacin 1% cream, mean score, before starting treatment was 7.60±3.75 and after treatment was 5.80±2.98 (p<0.001) and group on tretinoin 0.025% and clindamycin 1% gel mean score is 8.00±3.06 and after treatment was 5.40±2.93 (p<0.001).

**Conclusion:** Quality-of-life improves more in patients taking benzoyl peroxide 2.5% gel and clindamycin 1% gel, and then, tretinoin 0.025% and clindamycin 1% gel and then benzoyl peroxide 2.5% gel and nadifloxacin 1% cream.

**Keywords:** Quality-of-life, Acne vulgaris, Benzoyl peroxide, Clindamycin, Nadifloxacin, Tretinoin, Cardiff Acne Disability Index

### INTRODUCTION

Acne vulgaris is one of the commonest skin disorders which dermatologists have to treat, mainly affect adolescents, though it may present at any age.<sup>1</sup> It is a common distressing disease that can affect all aspects of an individual health-related quality-of-life, in particular feelings and emotions, personal relationships, sports, social life and employment chances.<sup>2</sup> Acne by definition is multifactorial chronic inflammatory disease of pilosebaceous units. Various clinical presentations include seborrhea, comedones, erythematous papules and pustules, less frequently nodules, deep pustules, pseudocysts, and ultimate scarring in few of them. It has four main pathogenetic mechanisms-increased sebum production, follicular hyperkeratinization, *Propionibacterium acne*

colonization, and the products of inflammation.<sup>1</sup>

In developing countries like India, here, health authorities placed great emphasis on the treatment of communicable and major non-communicable diseases such as hypertension, diabetes mellitus and cardiovascular diseases. Acne vulgaris is often viewed as part of growing up and regarded as a cosmetic problem. Thus, the treatment of acne is often sidelined by clinicians and health administrators.<sup>3</sup>

It is not a life-threatening condition, but, it results in many psychological and emotional problems owing to the high-frequency adolescent. Previous studies have examined the relationship in between acne vulgaris and various psychological factors such as anxiety, depression, emotions,

body dissatisfaction, and self-esteem. It causes psychological problems and inverse effect on the quality-of-life in patients, by resulting in post-inflammatory hyper-pigmentation and cheloidal scar formations.<sup>4</sup>

Quality-of-life is a general term which includes feeling of joy and satisfaction with life. Quality-of-life, self-confidences and self-esteem in patients with skin diseases have not sufficiently been attended to.<sup>5</sup> The impact of acne on quality-of-life shows some correlation with disease severity.<sup>6</sup> Psychological impact affects female patients more than male patients.<sup>7</sup> Clinically also, it is also essential to gauge psychosocial impact as this information will likely play a role in how aggressively the disease is treated and help to establish treatment goals.<sup>8</sup>

Although many studies investigated quality of life in clinical features using similar inventories, but, a few studies investigated the effect of treatment on quality of life in acne vulgaris.<sup>4</sup> Instruments to assess the quality-of-life should be reliable and responsive & developed based on patient input on relevant and important aspects related to the disease under study.<sup>9</sup> A number of acne-specific psychometric instruments have been developed among which is Cardiff Acne Disability Index (CADI), which is used in this study. Consideration of specific scales suggests that the CADI is the easiest scale to use in routine dermatology practice.<sup>10</sup> The present study investigated improvements and differences on quality-of-life in patients with acne vulgaris according to pre and post-treatment scores.

## METHODS

The study was designed as prospective and performed during 1 year. It was conducted in out-patient clinic of dermatology and venereal diseases, Rajindra Hospital, Patiala. The study enrolled the patients with acne vulgaris. Written informed consent was obtained from each participant. Ethic committee approved our study protocol and conduction. Inclusion criteria include age group of 15-35 years of both the sexes, more than two but <30 lesions and inflammatory (papules and pustules) and/or non-inflammatory (open and closed comedones) lesions on the face. Exclusion criteria includes patients whose ages are out of range, total lesion count <2 or more than 30, patients regularly using any anti-acne medications in the last 30 days before study, patients with nodulocystic lesions, acne conglobata, acne fulminans, secondary acne (e.g. chloracne, drug-induced acne, or any other acne requiring systemic treatment), patient unwilling or unable to comply with the study proceedings to give informed written consent, pregnant/lactating/women planning to conceive, patients with history of hypersensitivity to benzoyl peroxide or clindamycin or nadifloxacin or tretinoin.

Sixty patients were enrolled in the study that further subdivided into three groups including 20 patients each. Group I patients take benzoyl peroxide 2.5% gel was

once applied topically in the night and clindamycin 1% gel once during daytime. Group II patients take benzoyl peroxide 2.5% gel was once applied topically in the night and nadifloxacin 1% cream once during daytime. Group III patients applied tretinoin 0.025% and clindamycin 1% gel topically once during the night. CADI questionnaire was filled by the investigator before starting the treatment and after the treatment (i.e. after 12 weeks of starting the treatment). Changes in the CADI was evaluated for assessing the impact of disease on their quality-of-life. Permission from the concerned authorities who have copyrights of CADI scale had been taken.

## CADI

Quality of life was measured using the CADI, a five-item questionnaire. Question 1: "As a result of having acne, during the last month have you been aggressive, frustrated, or embarrassed?" and 4 Question: "How would you describe your feelings about the appearance of your skin over the last month?" measure feelings, Questions 2: "Do you think that having acne during the last month interfered with your daily social life, social events or relationships with members of the opposite sex?" and 3: "During the last month, have you avoided public changing facilities or wearing swimming costumes because of your acne?" measure social functioning, and Question 5: "Please indicate how bad you think your acne is now" measures perceived severity. Each question contains four possible answers with a score of 0~4. The CADI score is calculated by summing the score of each question resulting in a possible maximum score of 15 and a minimum score of 0. A score of 0~5 translates to mild quality-of-life impairment, 6~10 indicates moderate impairment, and 11~15 demonstrates severe impairment.

## Statistics

For statistical analysis, SPSS version 20.0 (IBM) was used. Variables with normal distribution and scale variables were stated as mean±standard deviation. Comparison for score of CADI was done during pre and post-treatment with paired t-test. CADI score was compared using One-way analysis of variance, post-hoc Tukey honest significant difference (HSD) test. A p<0.05 was accepted significant.

## RESULTS

The study group included 60 patients that were further divided into 20 patients each. Data of these patients were analyzed (male=28, 46.7%; female=32, 53.3%). Mean age of patients was 21.33±4.02 years. Quality-of-life was assessed by means of CADI questionnaire. The maximum CADI score was 12 in both female and male patients. Specific responses of CADI questionnaire are shown in Table 1. Group I (20 patients) where benzoyl peroxide 2.5%

**Table 1: Specific responses of CADI.**

CADI questions	T/t	Group I N (%)				Group II N (%)				Group III N (%)			
		Very much	A lot	A little	Not at all	Very much	A lot	A little	Not at all	Very much	A lot	A little	Not at all
1	Pre	6 (30)	4 (20)	5 (25)	5 (25)	4 (20)	5 (25)	5 (25)	6 (30)	9 (45)	1 (5)	8 (40)	2 (10)
	Post	0 (0)	0 (0)	9 (45)	11 (55)	0 (0)	4 (20)	10 (50)	6 (30)	0 (0)	9 (45)	7 (35)	4 (20)
2	Pre	4 (20)	6 (30)	5 (25)	5 (25)	5 (25)	4 (20)	5 (25)	6 (30)	3 (15)	3 (15)	4 (20)	10 (50)
	Post	0 (0)	0 (0)	10 (50)	10 (50)	1 (5)	6 (30)	7 (35)	6 (30)	2 (10)	4 (20)	1 (5)	13 (65)
3	Pre	4 (20)	6 (30)	5 (25)	5 (25)	6 (30)	0 (0)	5 (25)	9 (45)	3 (15)	9 (45)	1 (5)	7 (35)
	Post	1 (5)	0 (0)	8 (40)	11 (55)	0 (0)	6 (30)	4 (20)	10 (50)	1 (5)	5 (25)	12 (60)	2 (10)
4	Pre	7 (35)	6 (30)	7 (35)	0 (0)	3 (15)	9 (45)	7 (35)	1 (5)	7 (35)	5 (25)	8 (40)	0 (0)
	Post	0 (0)	1 (5)	12 (60)	7 (35)	1 (5)	7 (35)	11 (55)	1 (5)	1 (5)	5 (25)	12 (60)	2 (10)
5	Pre	4 (20)	10 (50)	6 (30)	0 (0)	4 (20)	10 (50)	6 (30)	0 (0)	3 (15)	9 (45)	8 (40)	0 (0)
	Post	0 (0)	1 (5)	12 (60)	7 (35)	1 (5)	11 (55)	7 (35)	1 (5)	0 (0)	7 (35)	8 (40)	5 (25)

CADI: Cardiff Acne Disability Index . Q1: As a result of having acne, during the last month have you been aggressive, frustrated, or embarrassed, Q2: Do you think that having acne during the last month interfered with your daily social life, social events or relationships with members of the opposite sex?, Q3: During the last month, have you avoided public changing facilities or wearing swimming costumes because of your acne?, Q4: How would you describe your feelings about the appearance of your skin over the last month?, Q5: Please indicate how bad you think your acne is now

gel and clindamycin 1% gel was applied by the patients, here, after applying paired t-test during pre-treatment mean is  $8.35 \pm 3.48$  and during post-treatment is  $2.95 \pm 2.09$  ( $p < 0.001$ ). Group II (20 patients) where benzoyl peroxide 2.5% gel and nadifloxacin 1% cream was applied by the patients, here, after applying paired t-test during pre-treatment mean is  $7.60 \pm 3.75$  and during post-treatment is  $5.80 \pm 2.98$  ( $p < 0.001$ ). Group III (20 patients) where tretinoin 0.025% and clindamycin 1% gel was applied by the patients, here, after applying paired t-test during pre-treatment mean is  $8.00 \pm 3.06$  and during post-treatment is  $5.40 \pm 2.93$  ( $p < 0.001$ ). Lesser the mean better will be the quality-of-life as we are using CADI where less score is considered to be better (Table 2).

Table 3 consists of comparison of Group 1 with Group 2 and Group 2 with Group 3 and Group 3 with Group 1 using post-hoc Tukey HSD test. After applying it, it was found that Group I (mean=2.95) improves the quality-of-life better than Group II (mean=5.40) and Group III (mean=5.80),  $p < 0.05$ .

## DISCUSSION

The majority of studies on the psychosocial impact of acne have been conducted among patient groups in the US and Europe, but there is poor understanding of this among the Indian population. All the psychosocial effects of acne listed earlier are now-a-days seen not only in the western countries, but also in the Indian society. Self-presentation is not only a matter of importance in western society, but also in India, who are also becoming aware of the tremendous impact of first impression.<sup>11</sup>

The present study indicated that acne treatment not only provided clinical improvements, but also improved in

psychological improvement in patients. Quality-of-life is one of the good indicators for psychological well-being. In our study, CADI was used to assess the quality-of-life.

Psychosocial state is inversely affected in the majority of dermatological diseases. Quality of life in most of the patients is affected in these diseases especially in acne vulgaris. In a study, it was found that acne affects quality-of-life of patients. The impact is proportional to the severity of acne. More severe acne is associated with greater effect on the quality-of-life with implications for self-esteem, body image, and relationships with others.<sup>12</sup>

In acne patients, anxiety, depression, anger, and impairment in the perception of body image. In a previous study, depression and suicidal thoughts were detected in 7.2% of acne patients. Some available data suggest that these negative psychological effects may be relieved by effective acne treatment. However, some studies asserted that the level of anxiety and depression in patients with acne remains unchanged.<sup>13</sup> In a previous study, where benzoyl peroxide and clindamycin and benzoyl peroxide and nadifloxacin were used, significant improvement in CADI scale was found and between group comparison no significant differences were found.<sup>14</sup> The present study shows that quality-of-life is improved more in benzoyl peroxide and clindamycin group than others. In another study, it was found that after successful treatment of acne there is improvement in many adverse psychiatric effects, including depression, anxiety and suicide attempts and also quality-of-life.<sup>15</sup>

Though our study has small sample size and quality of life in acne vulgaris was not compared with other dermatological diseases. We need further studies with large sample size, and investigating with other skin diseases.

**Table 2: On applying paired t-test on CADI score.**

	Range	Minimum	Maximum	Mean	Median	Standard error	Standard deviation	Paired t-test	p value
<b>Group I</b>									
Pre	10.00	5.00	15.00	8.35	7.00	0.77892	3.48	11.299	<0.001
Post	9.00	0.00	9.00	2.95	2.50	0.46721	2.09		
<b>Group II</b>									
Pre	12.00	3.00	15.00	7.60	6.00	0.842	3.75	4.414	<0.001
Post	10.00	2.00	12.00	5.80	5.00	0.67	2.98		
<b>Group III</b>									
Pre	10.00	5.00	15.00	8.00	6.50	0.68	3.06	10.614	<0.001
Post	10.00	1.00	11.00	5.40	5.00	0.65	2.93		

CADI: Cardiff Acne Disability Index

**Table 3: Comparing groups with each other by applying post-hoc test (Tukey HSD).**

Tukey HSD	Multiple comparisons				
	Mean difference (I-J)	Standard error	Significant	95% Confidence interval	
				Lower bound	Upper bound
<b>Group 1</b>					
Group 2	-2.85000*	0.85322	0.004	-4.9032	-0.7968
Group 3	-2.45000*	0.85322	0.016	-4.5032	-0.3968
<b>Group 2</b>					
Group 1	2.85000*	0.85322	0.004	0.7968	4.9032
Group 3	0.40000	0.85322	0.886	-1.6532	2.4532
<b>Group 3</b>					
Group 1	2.45000*	0.85322	0.016	0.3968	4.5032
Group 2	-0.40000	0.85322	0.886	-2.4532	1.6532

\*The mean difference is significant at the 0.05 level. HSD: Honest significant difference

## CONCLUSION

In conclusion, it was found that acne vulgaris must be considered as a skin disease with the potential to inversely affect the quality of life. On using combination benzoyl peroxide 2.5% gel and clindamycin 1% gel, there is more improvement in quality of life of acne vulgaris patients than with combinations benzoyl peroxide 2.5% gel and nadifloxacin 1% cream and tretinoin 0.025% and clindamycin 1% gel. Psychiatric and psychological support along with pharmacological therapy should also be part of acne treatment plan.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: The study was approved by the Institutional Ethics Committee*

## REFERENCES

- Rathi SK. Acne vulgaris treatment: the current scenario. *Indian J Dermatol.* 2011;56(1):7-13.
- Ismail KH, Mohammed-Ali KB. Quality of life in patients with acne in Erbil city. *Health Qual Life Outcomes.* 2012;10:60.
- Yap FBB. The impact of acne vulgaris on the quality of life in Sarwak, Malaysia. *J Saudi Soc Dermatol Dermatol Surg.* 2012;16:57-60.
- Akyazi H, Baltaci D, Alpay K, Hocaoglu C. Quality of life in adult patients with acne vulgaris before and after treatment. *Dicle Med J.* 2011;38(3):282-8.
- Ghaderi R, Saadatjoo A, Ghaderi F. Evaluating of life quality in patients with acne vulgaris using generic and specific questionnaires. *Dermatol Res Pract.* 2013;2013:108624.
- Kubba R, Bajaj AK, Thappa DM, Sharma R, Vedamurthy M, Dhar S, et al. Acne and quality of life. *Indian J Dermatol Venereol Leprol.* 2009;75:4-5.
- Kokandi A. Evaluation of acne quality of life and clinical severity in acne female adults. *Dermatol Res Pract.* 2010;2010:1-3.
- Bowe WP, Doyle AK, Crerand CE, Margolis DJ, Shalita AR. Body image disturbance in patients with acne vulgaris. *J Clin Aesthet Dermatol.* 2011;4(7):35-41.
- Saitta P, Grekin SK. A four-question approach to determining the impact of acne treatment on quality of life. *J Clin Aesthet Dermatol.* 2012;5(3):51-7.
- Dréno B. Assessing quality of life in patients with acne vulgaris: implications for treatment. *Am J Clin Dermatol.* 2006;7(2):99-106.

11. Pruthi GK, Babu N. Physical and psychosocial impact of acne in adult females. *Indian J Dermatol.* 2012;57(1):26-9.
12. Tasoula E, Gregoriou S, Chalikias J, Lazarou D, Danopoulou I, Katsambas A, et al. The impact of acne vulgaris on quality of life and psychic health in young adolescents in Greece. Results of a population survey. *An Bras Dermatol.* 2012;87(6):862-9.
13. Ozturk A, Deveci E, Bagcioglu E, Atalay F, Serdar Z. Anxiety, depression, social phobia, and quality of life in Turkish patients with acne and their relationships with the severity of acne. *Turk J Med Sci.* 2013;43:660-6.
14. Choudhury S, Chatterjee S, Sarkar DK, Dutta RN. Efficacy and safety of topical nadifloxacin and benzoyl peroxide versus clindamycin and benzoyl peroxide in acne vulgaris: a randomized controlled trial. *Indian J Pharmacol.* 2011;43(6):628-31.
15. Kaymak Y, Taner E, Taner Y. Comparison of depression, anxiety and life quality in acne vulgaris patients who were treated with either isotretinoin or topical agents. *Int J Dermatol.* 2009;48(1):41-6.

**doi:** 10.5455/2319-2003.ijbcp20141008

**Cite this article as:** Sehgal VK, Kaur J, Singh SP, Gupta AK. Impact on quality-of-life: before and after topical combinational treatment in patients of acne vulgaris. *Int J Basic Clin Pharmacol* 2014;3:812-6.