



## A cross-sectional study on quality of life among acne vulgaris patients in an urban population of Rajasthan, India

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### Abstract

**Objectives:** Acne vulgaris is a chronic disease pilosebaceous units of skin affecting the face in adolescents and adults It has considerable psycho-social impact on Health Related Quality of Life (HRQOL). The aim of our study is to assess the impact of acne on Quality of Life.

**Methods:** The current cross sectional study sample includes 300 patients having acne vulgaris who are diagnosed as acne vulgaris attending OPD of PIMS Umarda Ambua Udaipur Rajasthan (India) in department of dermatology for a period of 2 year. (November 2016 – October 2018).300 patients attending the Dermatology OPD with diagnosis of acne vulgaris were taken for the study. Patients aged 16 -35 years were included in our study. A detailed history was taken from all the participants of study. Cardiff Acne disability index (CADI) and Dermatology life quality index (DLQI) were administered on patients to determine the impact of acne vulgaris on quality of life (QOL). Data was analyzed to compare the quality of life indices (CADI and DLQI) for duration and severity of acne.

**Results:** Mean age of study population was 20.69 years. There was a male preponderance with ratio of 1.04:1 (M:F). According to this study 49% of patients had acne vulgaris for less than 1year. In present study maximum number 63.7% of patients presented with lesions over face followed by 14.7% of patients having lesions over face and back. According to DLQI scores of acne showed no effect in 4.3% of the patients, small effect in 26.3% of the patients, moderate effect in 38.7% of patients, very large effect in 29% of patients and extremely large effects on 1.7% of patients. According to CADI scores of acne showed low effect in 31.3% of the patients, majority had medium effect in 56.7% of patients and high effect was seen on 12 % of patients.

**Conclusions:** This study depicts that quality of life is significantly affected in patients of severe acne vulgaris. Application of QOL [Quality of life] measures and facilitates better treatment and prognosis in patients of acne vulgaris.

**Keywords:** quality of life, acne vulgaris, CADI, DLQI

### Introduction

Acne vulgaris is a chronic inflammatory disease of the pilosebaceous unit that affects at least 85 percent of adolescents and young adults [1]. In India, prevalence data from dermatology clinic in a tertiary care hospital in PIMS Udaipur reported acne in 50.6% of boys and 38.13% of girls in the age group 12-17 years. Acne affects 80% of individuals between puberty and 30 years of age. It was also recorded in 54% of women and 40% of men over 25 years of age 4.

All body area with high concentration of pilosebaceous glands are involved, but in particular the face, back and chest are involved. It results from androgen induced sebum production, altered keratinisation, inflammation and bacterial colonisation by *Propionibacterium acne* [2,3].

Though it is considered to be merely a cosmetic problem, it is associated with considerable psychological impairment which is comparable with certain chronic diseases like asthma, epilepsy, diabetes and arthritis. Acne patients are prone to low self-esteem, low self- confidence and social dysfunction which may lead to anxiety, depression, obsessive compulsiveness and sometimes suicidal ideation. Acne affects the functional abilities of individuals and

patients have higher rate of unemployment when compared to those without acne [4].

Acne is the most common problem that presents to dermatologists. Acne commonly involves face. Facial appearance represents an important aspect of one's perception of body image. Therefore it is not surprising that a susceptible individual with facial acne may develop significant psychosocial disability. As a part of emotional impact increased level of anxiety, anger, depression and frustration are observed in patients with acne. The majority of studies on psychosocial impact of acne have been conducted among patients groups in US and Europe, but there is poor understanding of this among the Indian population [5].

Acne also may have negative impact on personal relationships, sports activities and employment opportunities in teens and young adults. The management of acne must take into account the impact of acne on the patient's quality of life. This is important in particular, because there are effective therapies of acne available and administration of these agents can cause an improvement in quality of life and psychological health.

Increased awareness and early intervention for the

psychological and psychiatric sequel of acne can benefit patients. Measurement of quality of life changes gives insight into the impact of acne from a patient’s perspective and can also measure treatment success [6, 7]. This study was carried out to determine the impact of acne and its clinical severity on quality of life among patients of different grades of acne patients in various age groups using two questionnaire Cardiff acne disability index (CADI) and Dermatology life quality index (DLQI).

**Methods**

The current cross sectional study was conducted in Patients diagnosed as acne vulgaris attending OPD of PIMS Udaipur Rajasthan (India) in department of dermatology for a period of 2 year. (November 2016 – October 2018)

**Study tools**

- Case record form to record clinical data
- Lab investigations: USG Pelvis if required to rule out hormonal acne
- Acne severity will be assessed by grading system on clinical grounds.
- All patients will be asked to respond to 2 questionnaire (scales) CADI and DLQI.

**Inclusion criteria**

- Patients diagnosed as acne vulgaris (more than 1 month duration) above 16 years of age and below 35 yrs of age coming to dermatology OPD in PIMS Udaipur.

**Exclusion criteria**

- Patients below 16years of age.
- Patients above 35 years of age.
- All other types of acne except acne vulgaris will be excluded.

300 patients attending the Dermatology OPD with diagnosis of acne vulgaris were taken for the study. Patients aged 16-35 yrs were included in our study.

The procedure of the study started with identifying the participants for the study. Following this identification, before the collection of the data, informed consent was taken from all the participants and they were assured about the confidentiality by telling them about the purpose of the study.

A detailed history was taken after obtaining consent from all the participants of study. Acne was graded into 4 types (Grade I, II, III, IV) according to Indian classification based on number, type and severity of lesion.

Cardiff Acne disability index (CADI) and Dermatology life quality index (DLQI) were administered on patients to determine the impact of acne vulgaris on quality of life (QOL) [1, 5, 7, 8].

CADI is a questionnaire which is specific for acne and contains 5 questions-related to the last month- about feelings, interference with social life and interaction with the opposite gender, avoidance of public places, appearance of the skin and perceived severity of disease state.

Each question is scored from 0-3 leading to a total score of 0-15. A higher score shows a very large impact on quality of life. In our study a CADI score <8 is considered to have a small effect on quality of life and a score >8 is considered as having a larger effect on QOL. Both the questionnaires have Persian equivalents with confirmed reliability and validity.

DLQI is a general questionnaire for evaluation of quality of life in dermatology patients and consists of 10 questions about disease symptoms, feelings, daily activities, type of clothing, social or physical activities, exercise, job or education, interpersonal relationships, marriage relationships and treatment. Its domain is from zero (without any effect on quality of life) to 30(extremely large effect on quality of life).

According to the score obtained, the effect of disease on quality of life can be divided into 5 classes which are-without effect, low effect, moderate effect, very large effect and extremely large effect.

**Statistical Analysis**

Data was entered into SPSS version 21.0 and represented in proportions and percentages. Data was analyzed to compare the quality of life indices (CADI & DLQI) for duration and severity of acne.

**Results**

A total number of 300 patients aged 16 to 35 years were taken in study among. Patients were divided into 3 groups in which maximum 71% were among patients between 18 to 25 years who were mainly college going students followed 17.7% of age group 16 to 17 years who were school going students and 11.3% patients of age group 26 to 35 years.

Mean age of study population was 20.69 years. Out of total number of 300 patients, 51% of patients were male and 49% of patients were female.

There was a male preponderance with ratio of 1.04:1. In this study, out of 300 patients 87% were unmarried. About 75.7 % (maximum patients) were students with 16.6% were among working population and 7.7% were housewife (Table 1).

**Table 1:** Socio demographic profile, clinical features and quality of life measures in acne vulgaris Patients.

Socio demographic profile	Number (n=300)	%
Age		
16-17 years	53	17.7
18-25 years	213	71.0
26-35 years	34	11.3
Sex		
Male	153	51.0
Female	147	49.0
Marital status		
Unmarried	261	87.0
Married	39	13.0
Occupation		
Housewife	23	7.7
Job/work	50	16.6
Student	227	75.7

**Table 2:** Duration and grading of acne vulgaris among study subjects.

Duration of acne		
≤1 Year	147	49.0
>1 Year	153	51.0
Acne grading		
Grade I	77	25.7
Grade II	108	36.0
Grade III	81	27.0
Grade IV	34	11.3

According to this study 49% of patients had acne vulgaris for less than 1year. All the 300 patients were assessed on the

basis of clinical grounds and were divided into different grades I, II, III, IV of which maximum 36% were seen in grade II followed by 27% in grade III, 25.7% in grade I and 11.3 % in grade IV year (Table 2).

**Table 3:** Distribution of study population according to scar, post inflammatory hyper pigmentation (PIH) and location of lesion.

Number (n=300)		%
Scar and PIH		
No Scar or PIH	143	47.7
Scar	39	13.0
PIH	93	31.0
Scar and PIH	25	8.3
Location of lesion		
Face	191	63.7
Other body part±Face	01	36.3

In present study maximum 63.7% of patients presented with lesions over face followed by 14.7% of patients having lesions over face and back. About 5.3% patients had lesions over face, back and chest followed by 5% patients having lesions over face, chest, back and shoulder. Apart from lesions there was no presence of scar and PIH seen in maximum no. 47.7% of patients but about 31% patients were seen having PIH along with lesions, 13% showed scar and 8.3% showed scar and PIH both along with lesions (Table 3).

**Table 4:** Quality of life measures in acne vulgaris patients.

Dermatology life quality index (DLQI) grade		
No effect (0-1)	13	4.3
Small effect (2-5)	79	26.3
Moderate effect (6-10)	116	38.7
Very large effect (11-20)	87	29.0
Extremely large effect (21-30)	5	1.7
Cardiff acne disability index (CADI) grades		
Low (0-4)	94	31.3
Medium (5-9)	170	56.7
High (10-14)	36	12.0

According to DLQI scores of acne showed no effect in 4.3% of the patients, small effect in 26.3% of the patients, moderate effect in 38.7% of patients, very large effect in 29% of patients and extremely large effects on 1.7% of patients. According to CADI scores of acne showed low effect in 31.3% of the patients, majority had medium effect in 56.7% of patients and high effect was seen on 12% of patients (Table 4). Mean (SD) Scores of DLQI and CADI were 8.61 (4.99) and 6.22 (2.73) respectively (Table 5).

**Table 5:** Descriptive statistics of DLQI and CADI.

	DLQI	CADI
Maximum possible score	30	15
Mean (SD) score	8.61 (4.99)	6.22 (2.73)
Median	8.00	6.00
Highest score	24	13
Lowest score	0	0

Females were housewife engaged in household work. Thus a significant proportion of patients in the present study were students which compares well with the fact that acne is often considered to be a disease of adolescents. In the present study, 147 (49%) patients had lesions since <1year of duration and 153 (51%) patients had lesions since

>1 year of duration. Tan *et al.* in their study observed that 74% of patients had duration of more than 1 year before seeking medical attention. In all, 25% of patients had duration of disease <1 year. Thus the results of the present study were almost similar to the above study [12, 13]. Out of 300 patients grade II acne was the most prevalent one (36%) followed by grade III (27%). Comedones, papules, pustules were present in all the patients and predominant lesions were comedones. In the study by Adityan *et al.*, grade I acne was the most prevalent (60.2%), grade II (27.5%), grade III (2.6%), grade IV (9.7%). In the study by Supriti Biswas *et al.*, grade II acne was the most prevalent one (45%), grade III (16%) and grade IV (7%) [14, 15].

According to Cohen *et al.*, acne vulgaris is a dynamic disorder characterized by the presence of comedones and usually but not always by papules, pustules, nodules and scars. Comedones are the primary lesions of acne, the inflammatory lesions vary from small papules, to pustules to large tender fluctuant nodules. True cysts are rarely found in acne. The results of the present study are almost in concurrence with the above study [16, 17].

The present study is almost in concurrence with the study by Cunliffe and Cotterill in which face was the most common site involved followed by face, back and chest, then face and back.18 This may be due to the fact that acne lesions generally occur in sebaceous gland connected with vellus hair and due to regional differences in the activity of type 1, 5-alpha reductase in isolated [19, 20].

**Discussion**

Al-Akloby *et al.*, in their study of 225 patients with acne vulgaris observed that the age at presentation was 19.2±3.0 years for males and 18.4±4.2 years for females.

Kane *et al.* noted that the mean age of presentation of their patients was 25.58years.

**Sebaceous glands**

In present study of 300 patients, 93 patients (31%) of patients had post inflammatory hyper pigmentation. The incidence of post inflammatory hyper pigmentation in o2u1, r22 study was lower compared to that in earlier studies.

Post-acne scarring was noticed in 13% of our acne patients. We also observed that patients with longer duration of the disease were more likely to have post- acne scarring. This is an expected finding, which is also [23, 24].

The results of present study revealed that majority 71% of participants belong to age group of 18 to 25years with majority of students. Similar to the study done by Smithard *et al.*, in present study, out of the total number of reported in earlier studies.

In present study, we graded the severity of acne vulgaris, using a simple and 2q5 uick system of classification using a300 patients between age group 16 to 35years, 153 four-grade system. The result of the present study show patients (51%) were males and 147 patients (49%) were females. There was an overall male preponderance, the male to female ratio being 1.04:1.9-11 In the present study, out of 300 total, 227 (75.7%) were students mostly high school and college going ones followed by 50 (16.6%) of working population doing job and rest about 23 (7.7%) clear impact of acne on patient’s quality of life. Previous studies revealed that patients with chronic skin diseases such as psoriasis, atopic eczema and acne experience a greater impair2m 6, 2e7nt in their QOL than patients with other skin diseases.

In present study it was observed that there was a moderate to very large effect on 67.7 % based on DLQI scores similar to study by Safizedeh H *et al.* who found that there was a moderate to very large influence on quality of life in 51.8% of patients Haritha *et al.* also found moderate to very large effect in 64.18% of patients.<sup>28, 29</sup> In present study it was observed that there was medium to high effect on 68.7% of patients based on CADI scores which indicates high psychosocial burden from acne. Similarly hanisha *et al.* reported that based on specific responses of CADI 71.1% of the patients felt aggressive, frustrated or embarrassed as a result of having acne.<sup>30</sup>

**Conclusion**

Overall present study showed that quality of life is significantly impaired in patients of severe acne vulgaris. The impact of acne on QOL can be measured using general health measures, dermatology specific measures and acne specific measures. The study demonstrated that CADI and DLQI were easily understood by general population and quickly completed. So we recommend that use of these simple QOL measures as a part of integral clinical strategy when assessing patients for acne therapy will provide additional information on QOL impairment thus highlighting those patients requiring therapeutic intervention as early as possible.

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