

Assessment of Life Quality Index among Patients with Acne Vulgaris in a Tertiary Care Hospital, Karamsad, Gujarat: A Cross-Sectional Study

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Abstract:


Introduction: Acne Vulgaris affects nearly 85% of adolescents. Patients with acne shown to have social, psychological, and emotional impairments. **Objective:** To identify the psychosocial impacts on health-related objects of life. **Method:** This was a hospital-based, cross-sectional study done at rural tertiary care teaching hospital (Shree Krishna hospital) from October 2019 to November 2019 at Karamsad, Gujarat. Patient aged more than 15 years with acne vulgaris were included in the study. According to our inclusion criteria, total 152 patients were included in the study. Grading of Acne vulgaris and its sequelae was done by dermatologists and Quality of Life (QoL) was assessed by using the Dermatology Life Quality Index (DLQI) questionnaire. **Results:** Most cases (51.97%) were among 15-20 years. The study population included 61(40%) cases with females exceed males. Facial acne was the most common (64.47%). Acne scars were seen in 85.52% of cases. Also, acne scars were more common in males (45%) than females (40%). On interpreting dermatology life quality index score, it was found that 99 % of patients had elevated DLQI scores and Mean DLQI score was 3.05. **Conclusion:** This study showed a significant impairment of QoL in acne vulgaris patients. Quality of life worsened with the advancement in age, in chronic acne (longer duration of disease), and increase in severity of acne and the presence of post-acne hyperpigmentation.

Keywords: Acne Vulgaris, Adolescent, Quality of Life

Introduction:

The World Health Organization (WHO) defines the quality of life as "the individual's perception of their position in life among the context of the culture and value systems throughout that they live and about their goals".^[1] Acne vulgaris is a chronic inflammatory disorder of the pilosebaceous gland, that runs a chronic course and it's self-limiting.^[2] There are four stages of acne - Comedones, papules, pustules and cysts^[3] and in more severe cases, nodules and pseudocysts may be seen. Acne vulgaris is a common skin disease that affects approximately

9.4% of the world's population with the highest prevalence among adolescent. Acne vulgaris ranked 8th in the list of most prevalent diseases with a global prevalence of 645 million in the world in 2010. Approximately 80 % of people are affected by acne vulgaris between the onset of puberty and 30 years of age. By the end of 2026, the number of people affected by acne in India is estimated to reach nearly 23 million.^[1] It affecting more than 85% of adolescents and in 50% of cases, it extends into adulthood. ^[4] Acne affects mainly the face and facial appearance is an important aspect of an individual's

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realization of body image patient may feel socially isolated and emotionally distressed as a result of appearance and also severe acne affects the self-confidence and may lead to depression and anxiety.^[1] The major complications of acne are scarring and psychological distress which persists long after active lesions have disappeared which may lead to depression, suicidal thoughts or even suicide attempts. Acne affects the functional abilities of individuals and patients have a higher rate of unemployment when compared to those without acne. Acne also may hurt personal relationships, sports activities and employment opportunities in teens and young adults.^[2]

The prevalence of psychological impact in patients with skin disease is estimated to be 30-60%. It affects both males, as well as female but males, are more susceptible than females.^[4] Acne affects the functional abilities of individuals and patients have a higher rate of unemployment when compared to those without acne. Acne also affects personal relationships, and employment opportunities among adolescents and young adults. Some studies have mentioned the psychological impact of acne vulgaris such as anxiety, depression, emotions, self-identity, self-esteem, and suicidal tendency. There are various factors like age, sex and personality, the grade of acne and scarring determine a psychological aspect of acne vulgaris, Majority of times clinicians mostly deal with the clinical manifestation but also needed to focus on the psychological aspects of disease by assessing patients' quality of life (QOL) and self-esteem associated with a considerable psychosocial burden.^[3] The clinicians must take into account regarding clinical as well as psychological management of acne as it affects a patient's quality of life.

The present study was carried out to determine the impact of acne vulgaris on quality of life among patients of different grades of acne patients in different age groups. Assessment of impact of acne Vulgaris on health-related quality of life (QoL) is

needed to fully characterize the overall disease burden and treatment effectiveness. The use of QoL questionnaires helps to understand how acne affects the patient's routine life. One such questionnaire is the dermatological life quality index (DLQI) developed by Finlay and Khan, DLQI is widely used in research and clinical practice to assess changes in health-related QoL, as it is a sensitive measure.^[8]

Aim : To assess the impact of acne and its sequelae on the QoL.

Objective: To identify the psychosocial impacts on health-related objects of life.

Method:

This study was conducted after due permission from the institutional ethics committee (IEC) of Pramukhswami Medical College. It was a hospital-based cross-sectional study done in the dermatology department at a rural tertiary care teaching hospital (Shree Krishna hospital) from October to November 2019. A total 152 participants were included in the study as per convenient sampling.

Patient aged 15 years and above with a clinical diagnosis of acne vulgaris were included in the study after obtaining informed written consent in English or Gujarati. Patient with a known history of mental disorders or with a concurrent somatic disease that can affect their mental status were excluded.

A detailed history about of a presenting complains, duration of acne etc. were elicited. The cutaneous examination was done by a two dermatologist on all patients and the following were noted

1. Type of skin (Dry/normal/oily)
2. Site of the lesion (face, chest, or back)
3. Grade of acne
4. Post acne hyperpigmentation (present/absent)
5. Acne scars

Acne vulgaris was graded as^[7]:

Grade 1: Comedones, occasional papules

Grade 2: Papules, comedones, few pustules

Grade 3: predominant pustules, nodules, abscesses

Grade 4: Mainly cysts, abscesses, widespread scarring

Acne scars (all types included) were graded^[9]:

Mild: < 5 scars

Moderate: 5-10 scars

Severe :> 10 scars

In this study, after obtaining written consent from participants the questionnaire which is introduced by Finlay and Khan which is widely used to assess the quality of life.^[9] DLQI is a validated questionnaire which grades QoL by assessing the following domains: (a) physical symptoms and feelings (questions 1 and 2), (b) daily activities (questions 3 and 4), (c) leisure (questions 5 and 6), (d) work/collage(questions 7), (e) relationships specifically personal(questions 8 and 9), and (f) treatment regarding (question 10). Each question is scored as “very much” (score 3), “a lot” (score 2), “a little” (score 1), and “not at all” (score 0), keeping in mind the problems faced the previous week due to the disease. Final DLQI score is the total of all scores (range 0–30). High scores indicate poor QoL.

DLQI score interpretation is done as follows

0-1: No effect on patient's life

2-5: Small effect on patient's life

6-10: Moderate effect on patient's life

11-20 Very large effect on patient life

21-30: Extremely large effect on patient's life

The patient was asked to fill up the DLQI questionnaire (Gujarati or English) without assistance. English version of the DLQI was translated into Gujarati by bilinguals. Forward and backward translation was done by a different translator and validated by two other members in the dermatology department.

Data collected were analysed using IBM SPSS statistics software version 26.

Chi-square test was applied to compare the categorical variables between independent groups. Value of $p < 0.05$ was considered significant.

Results:

The study population included 152 cases with females 61 (40%) outnumbering males. Furthermore, maximum patients (51.97%) were among 15-20 years. As showed in Table 1, Facial acne was the most common (64.47%) followed by the involvement of both face and back together (20.39%). There was no statistically significant association between gender and site of acne. Grade 1 acne was the most common clinical type (61.84%), followed by grade 3 (24.34%) & Grade 2 acne (5.26%). Furthermore, males had more severe disease: among grade 3 acne (18.42%), 59.86% were males, and all grade 4 acne were males (1.97%). Chi square calculated value is 2.81 and $P = 0.58$. The result is not significant at $P < 0.05$. A gender difference was not statistically significant. Acne scars were seen in 85.52% in cases. Also, acne scars were more common in males (45.39%) than females (40.13%), which was statistically significant ($p < 0.05$).

The majority (78.94%) had oily skin followed by a patient with normal skin (18.42%) association between the type of skin and grade of acne was statistically highly significant ($p < 0.01$). (Table 2)

Grade of acne also influenced the degree of scars with a statistical significance result ($P < 0.001$). Post acne hyper pigmentation was noted in 25% statistically highly significant association was noted between the grade of acne and post-acne hyper pigmentation ($p < 0.001$). Dermatology life quality index scores: The DLQI scores ranged from 1 to 5 with a mean DLQI score of 3.05. Mean DLQI score was highest among 15-20 years old with a moderate scar. (Table 3)

Table 1: Comparison of gender with a site of acne, a grade of acne and acne scar*

Variabes	Gender (Number of Patients)		p-Value
	Male N (%)	Female N (%)	
Site of acne			
Face	58 (63.73)	40 (65.57)	>0.05
Back	01 (1.09)	05 (8.19)	
Face and chest	07 (7.69)	03 (4.91)	
Face and back	20 (21.97)	11 (12.08)	
Face, chest and back	05 (5.49)	02 (3.27)	
Grade of acne			
1	50 (54.94)	44 (72.13)	>0.05
2	10 (10.98)	08 (13.11)	
3	28 (30.79)	09 (14.75)	
4	03 (3.29)	00 (00)	
Acne scar			
Mild	30 (32.96)	15 (24.59)	<0.05
Moderate	13 (80.21)	04 (6.55)	
Severe	01 (2.19)	05 (8.19)	
Absent	47 (51.64)	37 (60.65)	

*Pearson's chi-square test was applied to test the significance

Table 2: Comparison of a grade of acne with a type of skin, acne scars, and post-acne hyperpigmentation

Variables	Grade of acne (Number of Patients)				p-Value
	1 N (%)	2 N (%)	3 N (%)	4 N (%)	
Type of skin					
Dry	01 (1.06)	01 (5.55)	1 (2.70)	1 (33.33)	<0.05
Normal	15 (15.95)	2 (11.11)	10 (27.02)	1 (33.33)	
Oily	78 (82.97)	15 (83.33)	26 (70.27)	1 (33.33)	
Acne scar					
Mild	18 (19.14)	11 (61.11)	15 (40.54)	1 (33.33)	<0.05
Moderate	3 (3.19)	2 (11.11)	11 (29.72)	1 (33.33)	
Severe	4 (4.25)	1 (5.55)	1 (2.70)	0 (00)	
Absent	69 (73.40)	4 (22.22)	10 (27.02)	1 (33.33)	
Post acne pigmentation					
Absent	70 (74.46)	13 (72.22)	28 (75.67)	03 (100)	>0.05
Present	23 (25.53)	05 (27.77)	09 (24.32)	00 (00)	

*Pearson Chi-square test was applied to test the significance

Table 3: Mean DLQI scores according to age, gender, duration of acne, a grade of acne, acne scar, post-acne pigmentation

Age (Years)	Mean DLQI	SD	F-statistics Value p-Value
15-20	79 (3.04)	2.7	11.71 <0.05
21-25	35 (2.74)	1.5	
>25	38 (2.63)	2.0	
Gender			
Male	2.86	2.4	11.44 <0.05
Female	2.90	2.0	
Duration of acne (in months)			
0-6	2.11	2.09	1.74 <0.05
7-12	2.58	2.51	
13-24	3.75	2.0	
25-36	2.6	1.07	
>36	4.6	3.78	
Acne scar			
Mild	3.18	2.65	4.43 <0.05
Moderate	3.61	2.25	
Severe	2.50	2.10	
Post acne pigmentation			
Present	2.40	1.72	0.527 <0.05
Absent	4.26	3.21	

SD: Standard Deviation, DLQI: Dermatology Life Quality Index

Table 4: Interpretation of DLQI Scores

DLQI Interpretation	No. of patients (%)
No effect (0-1)	41 (26.97%)
Mild effect (2-5)	92 (60.52%)
Moderate effect (6-10)	17 (11.18%)
Very large effect (11-20)	02 (1.31%)
Extreme large effect (21-30)	00 (0%)

DLQI: Dermatology Life Quality Index

Interpretation of the Dermatology Life Quality Index score :99 % of patients had high DLQI scores with a mild effect (Score 2- 5) being the most common (60.52%). None of the patients had a DLQI score > 20 (Extremely Large effect). Grade 2 acne had a very large effect on patients' life (8 out of 2 cases reported). Factor affecting Dermatology Life Quality Index scores was noted between DLQI scores & variables such as the age of patients, Duration & grade of acne, acne scar and post-acne pigmentation. (Table 4)

Discussion:

This hospital-based study included 152 self-reported cases of acne vulgaris in 2 months. Bincy Baby et al.^[3] included 160 cases over 6 months while Abhineetha Hosthota et al.^[4] included 100 cases in 3 months. Lesions of acne start around the adolescent age group and may persist even into the elderly. This study included cases 15 years or above. The mean age was 19 years, while Abhineetha Hosthota et al.^[4] reported a mean age of 21 among the population of 11-20 years and Tasoula et al.^[5] reported a population of 11-19 years having the mean age of 15.77 years.

Jancovic et al which showed that acne prevalence is more at the age of 16 and 17 years. According to Balakrishnan et al acne is a chronic disease affecting around 85% of the adolescents.

Mean DLQI scores in this study decreased with increasing age: 3.04 in 15–20-year-old compared to 2.63 among >25-year-olds. The severity of acne worsens as age advances, which affects QoL.

This study had 40% female which corroborated with other studies. There was no gender difference in DLQI scores was noted in this study. Similar findings were reported by Durai and Nair et al.^[6] indicating both genders were concerned about their appearance and self-reported acne.

Samanthula and Kodali found that 60.04% had acne for > 1 Year, in this study^[10] had acne for < 6 months meaning patients presented early for

treatment. Association between duration of acne and DLQI scores was statistically significant in this study ($P < 0.05$). Eleni Tasoulaet al.^[5] reported that more than half (55.3%) answered that they had never sought medical help from a dermatologist. Among pupils who had never visited a dermatologist, 15% reported having bought products from supermarkets and 55.8% OTCs from pharmacies.

Facial acne alone constituted 64.47% cases through a site of acne did not influence DLQI scores in this study. Durai and Nair et al.^[6] reported facial acne as the most common. Site of acne did not show any significant association with the QoL. Arbuckle et al.^[7] showed 42.15% acne patients had oily skin. In this study, 78.94% had oily skin, and the relation between the severity of acne and oiliness was statistically significant ($p < 0.001$).

The highest prevalence of grade 1 acne (78.94%) was encountered in this study while Durai and Nair et al.^[6] reported comedones to be most common (95%). No statistically significant difference association was noted between gender and grade of acne in this study.

A significant association between DLQI scores and grade of acne ($p < 0.05$) was observed in this study, sixty (60%) a percentage of subjects in this study had acne scars. There was a statistically significant association between acne scars and DLQI scores in this study ($p < 0.05$). Furthermore, a gender difference in acne scars in this study was statistically significant ($p < 0.05$).

Post-inflammatory hyper pigmentation is a common complication of acne vulgaris, particularly pigmented skin. Post acne pigmentation was seen in 75% which was slightly higher when compared to other studies. The statistical association of post-acne hyper pigmentation with DLQI scores was highly significant ($p < 0.01$) in this study.

Interestingly, it was found that few patients with mild scar had elevated DLQI scores which implied

that even mild acne and scars can pose a cosmetic problem to some patients, diminishing their QoL.

The difference in the findings of various studies highlight the social, behavioural and cultural factors, the difference in population characteristics, individual perception, plus the study design, and assessment tool used. Though the study population in this research was rural and urban both, both genders did identify even mild acne as a significant problem and reported early for treatment, Furthermore, the effect of acne on the QoL of patients was significant.

Conclusion:

This study showed a significant impairment of QoL in acne vulgaris patients. Worsening of QoL was observed with the advancement in age, longer duration of disease, and increase in severity of acne and acne scars, and the presence of post-acne hyper pigmentation. There was no gender difference in the QoL scores. Few patients with low-grade of acne and with minimal scarring also presented higher DLQI scores, implying that even mild acne can lead to psychological morbidity. This study thus stresses the importance of assurance and counselling along with early treatment of acne vulgaris in reducing disease-related psychological sequelae and enhancing the efficacy of treatment.

Limitation:

This study was a self-administered questionnaire-based; hence there is a possibility of individual bias, prejudice to the questions.

Declaration:

Conflict of Interest: Nil

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