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# Survey the Evaluation of Life Quality Index among Patients with Acne Vulgaris

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**Abstract:** Acne vulgaris is the most common skin condition affecting late adolescents across the globe. Psychosocial impact of acne on health-related Quality of Life (QoL) has been identified but it remains under-evaluated, especially in Iranian patients. This study was aimed to assess evaluation of life quality index among patients with acne vulgaris in private clinic in a Tehran, Iran. This study designed as prospective, cross-sectional study done between december 2015 to January 2016 on 228 consenting patients above 15 years of age with acne vulgaris. Acne vulgaris and its sequelae were graded and QoL was assessed by using Dermatology Life Quality Index (DLQI) questionnaire. About 146 cases (64%) were between 15 and 20 year. Total 130 cases are Females (57%) outnumbered males. Facial lesions (61.4%) and grade II acne were most common. Mean DLQI score was 7.22. DLQI scores were statistically influenced by the age of the patient, duration and grade of acne, acne scar and post acne hyperpigmentation. This study showed significant impairment of QoL in acne patients. Assurance and counseling along with early treatment of acne vulgaris are important to reduce disease-related psychosocial sequelae and increase the efficacy of treatment.

**Key words:** Quality of life, acne vulgaris, influencing factors, hyperpigmentation, significant

## INTRODUCTION

Acne vulgaris is the most common skin condition affecting late adolescents across the globe. Acne vulgaris is a chronic inflammatory disease of the pilosebaceous unit characterized by seborrhea, open and closed comedones, papules, pustules and in more severe cases, nodules and pseudocysts. It commonly affects the face, upper chest and upper back. Layton >85% of adolescents suffer from acne and in 50% of cases, it extends into adulthood (Lello *et al*., 1995). The major complications of acne are scarring and psychosocial distress which persists long after active lesions have disappeared (Saitta and Grekin, 2012).

Psychosocial effects of acne vulgaris have been long identified but this sequelae of acne remain under evaluated. Patients with acne have been shown to have levels of social, psychological and emotional impairments similar to serious diseases such as asthma, epilepsy, diabetes or arthritis (Shuster *et al*., 1978). These patients are more prone to embarrassment, social withdrawal, depression, anxiety and anger (Aktan *et al*., 2000).

Evaluation of acne using only clinical assessment does not capture the impact of the disease adequately. Assessment of impact on health-related Quality of Life (QoL) is needed to fully characterize the overall disease burden and effectiveness of treatment (Saitta and Grekin, 2012). WHO defines QoL as the "individual's perception of their position in the context of culture and value systems in which they live and in relation to their goals, expectations, standards and concerns" (The WHOQOL Groups, 1995). The use of QoL questionnaires can help us adequately understand how acne affects the patient on a day-to-day basis and can aid in assessing the efficacy of therapy and designing more targeted interventions. One such questionnaire is the Dermatology 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 (Finlay and Khan, 1994; Barnes *et al*., 2012). Studies on the impact of acne on QoL have been evaluated in US, UK, Spain, Brazil, Malaysia and Greece (Rapp *et al*., 2006, 2004; Walker and Lewis, 2006; Caballero *et al*., 2007; Tejada *et al*., 2011; Aghaei *et al*., 2006; Hanisah *et al*., 2009; Tasoula *et al*., 2012) very few similar studies have been conducted in Iran. The objective of this study was to assess the impact of acne and its sequelae on the QoL in a private clinic in Tehran, Iran.

## MATERIAL AND METHODS

This study designed as a prospective, cross-sectional study done in a Dermatology clinic from December 2015 to January 2016. Patients aged 15 year and above with a

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clinical diagnosis of acne vulgaris were included in the study after obtaining informed written consent in Farsi. Patients with a known history of mental disorder or with concurrent somatic diseases that can affect their mental status, patients with the history of using and systemic drugs known to predisposing them to acne and nonconsenting patients were excluded.

A detailed history pertaining to socio-demographic data, presenting complaints, duration of acne, etc., were elicited. Cutaneous examination was done by only one dermatologist on all patients and the following were noted: type of skin (dry/normal/oily), site of lesion (face, chest or back), grade of acne, postacne hyperpigmentation (present/absent) and acne scars. Acne vulgaris was graded as (Adityan *et al*., 2009):

- Grade I: comedones, occasional papules
- Grade II: papules, comedones, few pustules
- Grade III: predominant pustules, nodules, abscesses
- Grade IV: mainly cysts, abscesses, widespread scarring

Acne scars (all types included) were graded as (Kulthanan *et al*., 2007):

- Mild: <5 scars
- Moderate: 5-10 scars
- Severe: >10 scars

The DLQI questionnaire, first introduced by Finlay and Khan (1994) was used as the study instrument for this study after obtaining a formal written permission. DLQI is a validated questionnaire which grades QoL by assessing the following domains: physical symptoms and feelings (questions 1 and 2), daily activities (questions 3 and 4), leisure (questions 5 and 6), work/school (question 7), personal relationships (questions 8 and 9) and treatment (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). Final DLQI score is the sum 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's life
- 21-30 extremely large effect on patient's life

Patients were asked to fill up the DLQI questionnaire without assistance. English version of the DLQI was translated into Farsi. Forward and backward translation were done by different translators and validated by two other members.

## RESULTS AND DISCUSSION

**Statistical analysis:** The data collected were analyzed using IBM SPSS Statistics Software Version 20. Comparison of categorical variables between independent groups was done with $\chi^2$-test. Analysis of variance was done with post-hoc Tukey's test to compare DLQI scores with various categorical variables. Value of $p<0.05$ was considered significant and $p<0.001$ as highly significant.

**Findings:** The study population included 228 cases with females (57%) outnumbering males. The mean age was 19.39 years. Furthermore, 146 patients (64%) were among 15-20 years. Facial acne was the most common (61.4%), followed by involvement of both face and back together (15.7%). There was no statistically significant association between gender and site of acne (Table 1). In the present study, there was no statistically significant association betweengender and grade of acne (Table 2).

Duration of acne was less than months in most cases (42%). The majority of patients (61.4%) had oily skin followed by patients with normal skin (36.8%). Association between the type of skin and grade of acne was statistically highly significant ($p<0.001$) as seen in Table 3.

Grade II acne was the most common clinical type (67.5%) followed by grade I and III (14.9% each)

Table 1: Comparison of gender with site of acne

| | Gender | | |
|---|---|---|---|
| Site of acnes | Male | Female | p-value |
| Face | 58 | 82 | p>0.05 |
| Back | 2 | 4 | |
| face and chest | 12 | 14 | |
| Face and back | 16 | 20 | |
| Chest and back | 0 | 2 | |
| Face, chest and back | 10 | 8 | |

Table 2: Comparison of gender with grade of acne and acne scar

| | Gender | | |
|---|---|---|---|
| Grade of acne | Male | Female | p-value |
| Grade I | 14 | 20 | p>0.05 |
| Grade II | 60 | 94 | |
| Grade III | 20 | 16 | |
| Grade IV | 4 | 0 | |
| **Acne scar** | | | |
| Mild | 30 | 24 | p>0.05 |
| Moderate | 26 | 26 | |
| Severe | 28 | 30 | |
| Absent | 14 | 50 | |

Table 3: Comparison of grade of acne with type of skin

| | Grade of acne | | | | |
|---|---|---|---|---|---|
| Type of skin | I | II | III | IV | p-value |
| Dry | 0 | 4 | 0 | 0 | p<0.001 |
| Normal | 28 | 54 | 0 | 0 | |
| Oily | 6 | 96 | 36 | 4 | |

Table 4: Mean DLQI scores according to age, gender, duration of acne

| | DLQI | | |
|---|---|---|---|
| Variables | Mean | SD | p-value |
| **Age** | | | |
| 15-20 | 7.00 | 4.40 | p>0.05 |
| 21-25 | 7.03 | 4.44 | |
| >25 | 10.13 | 4.51 | |
| **Gender** | | | |
| Male | 7.84 | 4.88 | |
| Female | 6.83 | 4.09 | |
| **Duration of acne (month)** | | | |
| 0-6 | 6.06 | 4.07 | p>0.05 |
| 7-12 | 6.76 | 4.22 | |
| 13-24 | 9.24 | 4.67 | |
| 25-36 | 9.60 | 3.85 | |
| ≥36 | 8.31 | 5.04 | |

furthermore, males had more severe disease: among grade III acne, 55.6% were males and all grade IV acne were males. However, this gender difference was not statistically significant.

Acne scars were seen in 73% of cases. Also, acne scars were more common in males (86%) than females (61.5%) which was not statistically significant (p>0.05) as seen in Table 1. Furthermore, grade of acne also influenced the degree of scars with a high statistical significance (p<0.001).

Postacne hyperpigmentation was noted in 75.4% of casesstatistically highly significant association was noted between the grade of acne and postacne hyperpigmentation (p<0.001).

The DLQI scores ranged from 1-20 with mean DLQI score of (7.22±4.45) which showed an impairment of 24%. Mean DLQI scores were highest among patients older than 25 year olds with grade IV acne, severe scars and postacne hyperpigmentation (Table 4 and 5).

Interpretation of dermatology life quality index scores: 91% of percentage patients had elevated DLQI scores with mild effect (score 2-5) being the most common (33.3%). None of the patients had DLQI score >20 (extremely large effect).

Nine out of 17 cases with grade III acne and all grade IV acne had a very large effect on patient's life. Furthermore, 13 out of 29 cases with severe acne scars had DLQI score in range of 11-20 interpreted as very large effect.

Factors affecting dermatology life quality index score: statistically significant association was noted between DLQI scores and variables such as the age of the patient, duration and grade of acne, acne scar and postacne hyperpigmentation.

This clinic-based study included 228 self-reported cases of acne vulgaris in 12 month. Durai and Nair (2015) included 140 cases over 5 month while Kulthanan *et al.* (2007) included 110 cases in 1 year. However, some school-based studies (Tasoula *et al.*, 2012; Jankovic *et al.*, 2012) had a much higher number of participants as in these studies acne was actively searched for in the study population and not self-reported.

Table 5: Mean DLQI scores according to grade of acne, acne scar, postacne hyperpigmentation

| | Grade of acne | | |
|---|---|---|---|
| Variables | Mean | SD | p-values |
| **Grades** | | | |
| Grade I | 4.12 | 3.39 | p<0.001 |
| Grade II | 7.19 | 4.04 | |
| Grade III | 9.28 | 4.81 | |
| Grade IV | 16.50 | 3.54 | |
| **Acne scar** | | | |
| Mild | 5.93 | 4.04 | p<0.05 |
| Moderate | 6.96 | 3.89 | |
| Severe | 9.17 | 5.10 | |
| Absent | 6.75 | 4.21 | |
| **Postacne hyperpigmentation** | | | |
| Present | 8.04 | 4.54 | p<0.001 |
| Absent | 4.68 | 3.02 | |

Lesions of acne start around 15 year of age and may persist even into the thirties and forties. This study included cases 15 year and above. The mean age of the study population was 19.39 while Tasoula *et al.* (2012) reported a mean age of 15.77 among the population of 11-19 year.

Mean DLQI score in this study increased with increasing age: 10.12 in 25 year of age and older compared to 7.00 among 15-20 year old patients. Severity of acne worsens as age advances, affecting QoL (Durai and Nair, 2015; Ismail and Mohammed, 2012; Lasek and Chren, 1998). A possible explanation could be that peer and romantic relationship act a very important roll in late adolescence and early adulthood, so appearance has significant influence on peoples lives comparatively in early adolescence, family is still the key and appearance does not matter much (Tasoula *et al.*, 2012).

This study had 57% females which corroborated with other studies (Rapp *et al.*, 2004; Tasoula *et al.*, 2012; Jankovic *et al.*, 2012; Lasek and Chren, 1998). No gender difference in DLQI scores was noted in this study. Similar finding was reported by Durai and Nair (2015) indicating both genders were concerned about their appearance and self-reported acne. This was in contrast to some studies where females had higher DLQI scores (Lasek and Chren, 1998; Cotterillm and Cunliffe, 1997; Halvorsen *et al.*, 2011).

Samanthula and Kodali (2013) found that 60.04% had acne for >1 year while the majority (42%) in this study 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 ($p<0.05$).

Facial acne alone constituted 61.4% of cases though site of acne did not influence DLQI scores in this study. Durai and Nair (2015) reported facial acne as most common (99.3%); site of acne did not show any significant association with the QoL. This was contradictory to earlier studies reporting severity of facial acne to correlate with worsening QoL.

Increased sebum secretion is a major concurrent event associated with the development of acne. Kulanthan *et al.* (2007) found two-thirds of acne patients to have oily skin. In this study, 61.4% had oily skin and the relation between severity of acne and oiliness was statistically highly significant ($p<0.001$).

The highest prevalence of grade II acne (67.5%) was encountered in this study while Durai and Nair (2015) reported comedones to be most common (95%). No statistical association was noted between gender and grade of acne in this study.

A significant correlation between DLQI scores and grade of acne ($p<0.001$) was observed in this study which was in agreement to studies done in Greece, Iraq, Turkey and France (Tasoula *et al*., 2012; Ismail and, Mohammed, 2012). Few past studies have shown no such association (Salek *et al*., 1996; Gupta and Gupta, 2003).

While some authors reported acne scars in 40.2% (Kane *et al*., 2007) and 25% (Kilkenny *et al*., 1998). Hayashi *et al*. (2015) observed acne scars in 90.8% and opined that acne scars had a negative impact on patient's QoL. About 73 percentage of subjects in this study had acne scars. There was a statistically significant association between acne scars and DLQI scores in this study ($p<0.05$).

Postinflammatory hyperpigmentation is a common complication of acne vulgaris, particularly in pigmented skin. Postacne pigmentation was seen in 75.4% which was slightly higher when compared to earlier studies (Kane *et al*., 2007). The statistical association of postacne hyperpigmentation with DLQI scores was highly significant ($p<0.001$) in this study.

The mean DLQI score of (7.22) in this study showed an impairment of 24%. Mean DLQI in different studies ranged from 1.7 to 8.95 (Lello *et al*., 1995; Walker and Lewis, 2006; Durai and Nair, 2015; Tasoula *et al*., 2012) Interestingly, it was found that few patients with grade II acne and some cases 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 differences in the findings of various studies highlight the social, behavioral and cultural factors, differences in population characteristics, individual perception, plus the study design and assessment tool used, 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 significant impairment of QoL in acne patients. Worsening of QoL was observed with advancement in age, longer duration of disease, increase in severity of acne and acne scars and the presence of postacne hyperpigmentation. 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 psychosocial morbidity. This study thus stresses the importance of assurance and counseling along with early treatment of acne vulgaris in reducing disease-related psychosocial sequelae and enhancing the efficacy of treatment.

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