Abstract

Background: Acne vulgaris causes erythematous papulopustular lesions in active stage and often leave behind residual scarring and pigmentation. Its onset in adolescence may add to the emotional and psychological challenges experienced during this period. Aims: To assess the impact of acne on the various psychosocial domains of daily life. Materials and Methods: This was a prospective, cross-sectional study done in the dermatology out-patient department of a tertiary care hospital from January to March 2015. A total of 100 consecutive, newly diagnosed patients of acne vulgaris, aged 15 years and above were included in this study. The relationship between acne vulgaris and its sequelae was analyzed with ten different domains of daily life by using dermatology life quality index (DLQI) questionnaire. Results: Females (56%), 15–20 year olds (61%), facial lesions (60%), and Grade II acne (70%) were most common. Acne scars were noted in 75% patients, whereas 79% cases had post-acne hyperpigmentation. Thirty-seven percent patients had DLQI scores of (6–10) interpreted as moderate effect on patient’s life. Statistically significant correlation (P < 0.05) found were as follows: Physical symptoms with grade of acne; embarrassment with site and grade of acne; daily activities with grade of acne and post-acne pigmentation; choice of clothes with site of acne; social activities with gender, site and grade of acne; effect on work/study with grade of acne; interpersonal problems with site and post-acne pigmentation; sexual difficulties with grade of acne. Limitation: It was a hospital-based study with small sample size. Conclusion: Significant impact of acne and its sequelae was noted on emotions, daily activities, social activities, study/work, and interpersonal relationships. Assurance and counseling along with early treatment of acne vulgaris is important to reduce disease-related psychosocial sequelae and increase the efficacy of treatment.

Key Words: Acne, dermatology life quality index, psychosocial impact, quality of life

Introduction

Acne vulgaris is a common skin disease with prevalence reaching up to 80% during adolescence.[1] Major complications of acne are scarring and psychosocial distress which persists long after the active lesions have disappeared.[2] Its onset in adolescence may add to the emotional and psychological challenges experienced during this period,[3] and it can lead to the developmental issues of body image, socialization, and sexuality.[4] Psychological issues such as dissatisfaction with appearance, embarrassment, self-consciousness, lack of self-confidence, and social dysfunction such as reduced/avoidance of social interactions with peers and opposite gender, reduced employment opportunities have been documented.[4-6] Acne can negatively influence the intension to participate in sports.[7] Moreover, anxiety and depression are found to be more prevalent among acne patients than controls.[8-10] Even suicidal ideation was found in 6–7% of acne patients.[11] Although acne was earlier considered to be merely a cosmetic affliction, the psychosocial effects of the disease have now been scientifically proven. Studies have shown these effects to improve when acne is treated.[12] Thus, it is imperative that quality of life (QoL) issues of acne are taken into consideration for a wholesome management
of the patients. The use of QoL questionnaires can help us to adequately understand how acne affects the patient on a day-to-day basis and can aid in assessing the efficacy of therapy. In this study, the dermatology life quality index (DLQI) questionnaire,\textsuperscript{13} a general health-related QoL questionnaire, was used as it enquires into ten different domains of daily life activities. There is a paucity of studies on the psychosocial impact of acne vulgaris in the Indian scenario. The aim of this study was to assess the impact of acne on the various psychosocial domains of daily life.

**Materials and Methods**

It was a hospital-based, prospective, cross-sectional study done in the dermatology and STD out-patient department of a tertiary care teaching hospital, for a period of 3 months (January to March 2015). Approval from the Institutional Research and Ethics Committees was obtained, and patients were recruited after informed written consent (Tamil/English).

**Inclusion criteria**

A total of 100 consecutive patients, newly diagnosed as acne vulgaris, of age 15 years and above, were included in the study.

**Exclusion criteria**

Acne patients with known history of mental disorder, concurrent physical illnesses and disabilities that can affect their mental state, patients who used topical and systemic drugs known to predispose to acne were excluded from the study.

The parameters collected were divided into (1) Clinicodemographic data: Age, sex, duration, site, grade of acne, post-acne hyperpigmentation, and acne scars. Acne was graded into four grades (I–IV),\textsuperscript{14} whereas acne scars (all types included) were graded\textsuperscript{2} as mild, moderate, and severe. (2) DLQI questionnaire (Tamil or English) filled up by the patients without assistance. English version of the DLQI was translated into Tamil by two bilinguals. Forward and backward translation was done by different translators and validated by two other members.

The DLQI questionnaire\textsuperscript{13} (used after formal written permission) grades QoL by assessing the following domains: (a) Physical symptoms and feelings (Q1, Q2), (b) daily activities (Q3, Q4), (c) leisure (Q5, Q6), (d) work/school (Q7), (e) personal relationships (Q8, Q9), and (f) treatment (Q10). Each question is scored as four-point Likert scale (score 3–0), keeping in mind the problems faced the previous week due to the disease. Final DLQI score is the sum of all scores (range 0–30). DLQI score interpretation is done as follows: Score (0–1) no effect on patient’s life, (2–5) small effect (6–10) moderate effect, (11–20) very large effect, and score (21–30) extremely large effect on patient’s life.

**Statistical analysis**

The data collected were subjected to Chi-square test and analysis of variance using IBM SPSS statistics software version 20 (IBM Corporation, Armonk, New York, USA). The level of significance was set at \( P < 0.05 \).

**Results**

Among a study population of 100 patients, females predominated with 56% cases. Sixty-one percent were in the age group of 15–20 years, whereas 39% patients had recent onset of acne (0–6 months duration). Facial acne as single site involvement was the most common (60%) type encountered, whereas multiple site involvement (face, chest, and back together) was seen in 37% cases. Grade II acne with 70% patients was the most common clinical type found. Seventy-five percent of cases had varying degree of acne scars, whereas post-acne hyperpigmentation was seen in 79% cases. Table 1 shows the clinicodemographic profile of study population. Thirty-seven percent patients had a DLQI score in the range of (6–10) interpreted as moderate effect on patients life, whereas 29% patients scored (11–20) interpreted as very large impairment of QoL [Table 2].

Table 3 shows the significance of correlation between the ten different domains of the DLQI questionnaire (Q: 1–10) with the each of the following clinicodemographic factors: Gender, age, site of lesions, grade of acne, acne scars, and post-acne pigmentation. Statistically significant correlation \( (P < 0.05) \) was seen between Q1: Physical symptoms and grade of acne. The domain, Q2: Embarrassment/self-consciousness showed statistical significant correlation to site and grade of acne while Q3: Effect on daily activities showed significant statistical association to the grade of acne and post-acne pigmentation. Statistically significant correlation was seen between Q4: Choice of clothes and site of acne. The domain, Q5: Effect on social activities showed statistically significant correlation to gender, site, and grade of acne. Statistically significant correlation was seen between Q7: Effect on work/study and grade of acne while the domain, Q8: Problems with partner/close friends/relatives showed statistically significant correlation to the site of acne and post-acne pigmentation. The domain, Q9: Sexual difficulties showed statistically significant correlation to the grade of acne. The domains, Q6: Effect on sports and Q10: Treatment taking up time/making skin messy did not show statistically significant correlation to any of the clinicodemographic factors studied \( (P > 0.05) \).

**Discussion**

The present research aimed to study the QoL issues among acne patients in India. The influence of factors
such as age, gender, site of lesions, grade of acne, acne scars, and post-acne pigmentation on ten psychosocial domains of daily life was analyzed.

**Q1: Physical symptoms of itch, soreness, pain, stinging**

Physical symptoms were reported by 78% patients in the present study. Tasoula et al.\(^{15}\) reported 25% of cases of facial acne and 33% cases of acne in the back to be having itch as a physical symptom while Reich et al. reported 50% of acne cases to have itch.\(^{16}\) Enquiry into the exact nature of physical symptom was however outside the purview of this study; however, many patients complained of discomfort/pain in the acne lesions. In this study, physical symptoms were found to show statistically significant correlation to the grade of acne \((P < 0.001)\).

**Q2: Embarrassment/self-consciousness**

In this study, 88% cases reported embarrassment/self-consciousness due to acne which was consistent to previous studies.\(^{15,17}\) In the study by Ogbede and Henshaw,\(^{18}\) 64.4% patients were psychologically perturbed by the appearance of their skin. Magin et al.\(^{5}\) in their qualitative study on the psychological sequelae of acne stated that acne negatively affected self-image in all patients, at least to some degree. Embarrassment and self-consciousness were directly linked to low self-image and self-esteem; this finally led to decrease in self-confidence. In the present study, the degree of embarrassment/self-consciousness showed statistically significant correlation to the severity of acne \((P < 0.001)\), which was similar to the findings by Tasoula et al.\(^{15}\) and van der Meeren.\(^{19}\) Moreover, the association between site of acne and embarrassment/self-consciousness was found to be statistically significant \((P < 0.05)\) in this study. Patients with facial acne reported feeling highly self-conscious about their acne and this was the main reason they sought treatment.

**Q3: Effect on daily activities-shopping, looking after home, garden**

In this study, problems in daily activities were complained by 69% patients. The degree of difficulty in daily activities showed statistically significant association \((P < 0.05)\) to the grade of acne and post-acne hyperpigmentation. Magin et al. established a linear relationship of appearance to self-image and self-esteem; unattractive appearance lead to embarrassment and finally to avoidance of social contact. Moreover, they could demonstrate a temporal association between anger, frustrations, and acne.\(^{5}\) Thus, problems in daily activities due to acne may be attributed to avoidance behavior, anger, and frustration.

**Q4: Influence on choice of clothes**

Appearance is often appraised through dressing\(^{20}\) and thus clothes form an important component of social acceptance. While 25–29% patients in previous studies reported difficulty in dressing attributable to acne,\(^{15,21}\) it was 37% in this study. Site of acne showed statistically significant correlation \((P < 0.05)\) to choice of clothes.

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**Table 1: Clinicodemographic characteristics of the study population**

| n=100 (%) |
|-----------|
| Gender    |
| Male      | 44 |
| Female    | 56 |
| Age (years) |
| 15-20    | 61 |
| 21-25    | 31 |
| >25      | 8  |
| Duration of acne (months) |
| 0-6      | 39 |
| 7-12     | 23 |
| 13-24    | 20 |
| 25-36    | 5  |
| >36      | 13 |
| Site     |
| Face     | 60 |
| Chest    | 0  |
| Back     | 2  |
| Face and chest | 11 |
| Face and back | 17 |
| Chest and back | 1 |
| Face, chest and back | 9 |
| Grade of acne |
| I        | 11 |
| II       | 70 |
| III      | 17 |
| IV       | 2  |
| Postinflammatory hyperpigmentation |
| Present  | 79 |
| Absent   | 21 |
| Acne scar |
| Mild     | 23 |
| Moderate | 25 |
| Severe   | 27 |
| Absent   | 25 |

**Table 2: Interpretation of dermatology life quality index scores**

| Total patients n | No effect score (0-1) | Mild effect score (2-5) | Moderate effect score (6-10) | Very large effect score (11-20) | Extreme large effect score (21-30) |
|------------------|----------------------|------------------------|-------------------------------|-------------------------------|----------------------------------|
| 100 (100)        | 0                    | 34 (34%)               | 37 (37%)                      | 29 (29%)                      | 0                                |
in this study. Patients with truncal acne consciously avoided wearing clothes that revealed their acne affected skin. In the study by Ogedegbe and Henshaw,\(^{18}\) 14.4% adolescent avoided wearing costumes that exposed extrafacial areas affected by acne.

**Q5: Effect on social/leisure activities**
In this study, 68% patients reported acne affected their social activities. Negative influence on social/leisure activities showed statistically significant correlation \((P < 0.05)\) to gender, site of lesions, and grade of acne. Patients responded that they especially avoided social gatherings during an episode of acute acne flare as they felt other people stared at their acne and this made them uncomfortable. This was more so in females. A higher degree of social anxiety, social avoidance/withdrawal due to acne was also reported by Yolaç\(^{22}\) and Fried and Wechsler.\(^{23}\) Magin et al.\(^{5}\) stated that many subjects reported avoidance behavior in response to their acne and some went on to develop permanent effect on personality such as avoidant personality trait.

**Q6: Difficulty in sports**
A study among Scottish students found that 10% of acne sufferers avoided swimming and other sport because of embarrassment.\(^{24}\) While Tasoula et al.\(^{15}\) reported 14.4% of acne patients having difficulty in sports attributed to acne, it was 25% in this study. No statistically significant correlation could be demonstrated between the clinicodemographic factors and sports in this study. This could be because the study population was mainly suburban, where sports may not be an important part of day-to-day life.

**Q7: Effect on work/study**
In the present study, 57% patients reported negative effect of acne on work/study. Twenty-one percent of pupils felt that acne affected their schoolwork and personal activities.\(^{15}\) Similar findings were also reported by Walker et al.\(^{24}\) In this study, negative effect on work/study showed statistically significant correlation to the grade of acne \((P < 0.05)\). Patients stated that they were constantly bothered by their acne and facial appearance, and this affected their ability to concentrate on study/work.

**Q8: Problems with partner/close friends/relatives**
In the present study, 75% patients reported interpersonal problems. Problems with partner/close friends/relatives showed statistically significant correlation \((P < 0.05)\) to the site of acne and post-acne pigmentation. Patients reported being constantly enquired about their acne, even teased by peers and relatives. Female patients felt that acne reduced their prospect in getting alliances for arranged marriage. Psychosocial research have shown that physically attractive strangers attribute more
positive qualities such as friendliness, intelligence, and higher social skill levels to each other, compared with physically unattractive strangers. Adult females with acne agreed to the advantage of physical attractiveness in getting jobs and life partners. Magin et al. stated that primary concern of patients with acne was appearance which might be, in part, a media generated ideal of perfect skin. Subjects were acutely aware that they failed to live up to the ideal of perfect, flawless skin portrayed in advertising and television. This led to a self-perceived reduction in sexual attractiveness. Subjects also had a perception of being judged by others because of acne while many feared being thought of as unhealthy or unhygienic.

**Q9: Sexual difficulties**

Only 5% patients in this study reported sexual difficulties due to acne. Statistically significant association was observed between sexual difficulties and grade of acne ($P < 0.05$). However, enquiry into the exact cause of sexual difficulty was outside the purview of this study. Sexual difficulties reported could be secondary to self-perceived reduction in sexual attractiveness; disinterest secondary to acne associated anxiety; or unwillingness to divulge personal information. Kulthanan et al. reported similar findings and opined that it is a feature of Asian culture that people became embarrassed or avoided questions about personal relationships.

**Q10: Treatment of acne making home messy/taking up time**

Treatment of acne is probably more time consuming than generally thought, causing discomfort and annoyance to many patients. Twenty-five percent of pupils under the treatment for acne reported that treatment was unpleasant. In the present study, 45% reported that treatment/home remedies of acne were taking up time or making life messy. No statistically significant correlation could be demonstrated between the clinicodemographic factors and treatment difficulties in this study. Patients admitted that their daily routine to hide acne, took a lot of their grooming time. Adolescents with acne feel uncomfortable, avoid eye contact, grow their hair long to cover their faces and girls used makeup to camouflage their acne. Women found camouflaging their acne with makeup was effective in decreasing embarrassment and self-consciousness. More than half of the untreated pupils with acne brought over the counter products without prior consulting a dermatologist. Patients in this study confessed to trying self-remedies in the form of using creams/medications for acne as suggested by peers or using turmeric powder paste, which is a common skin care routine in South India.

**Limitations**

One limitation of this study was the possibility of referral bias and overestimation of psychometric morbidity with hospital-based data. Furthermore, the sample size was small. There is a need to replicate this study in community setting to extrapolate the findings to all acne patients.

**Conclusion**

The present study showed significant impact of acne and its sequelae on physical symptoms, emotions, daily and social activities, study/work, and also interpersonal relationships. Thus, it is safe to conclude that severity of acne should not be assessed solely on the physical grade of acne alone but should include its effect on QoL. The need of inclusion of QoL questionnaires in evaluating patients of acne vulgaris at baseline, during, and after treatment is of utmost importance. Education of dermatologists and general practitioners alike, about the psychosocial impairments of acne can help in identifying cases with QoL issues. There is a need for integration of psychological intervention in the management of acne vulgaris, for improvement in the QoL in such patients. Setting up supportive groups could also be of immense help for these patients.

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Nil.

**Conflicts of interest**

There are no conflicts of interest.

**What is new?**

Acne vulgaris and its sequelae commonly affects emotions, daily & social activities, quality of study/work and interpersonal relationships. Identifying acne patients with QoL issues is important so as to be able to provide a wholesome management leading to clinical and QoL improvement.

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