QUALITY OF LIFE AMONG ADOLESCENTS WITH ACNE IN A TERTIARY REFERRAL CENTRE IN BANGALORE

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ABSTRACT

BACKGROUND

Acne is a common problem in adolescent children and has a considerable impact on their quality of life.

AIMS

The impact of acne on quality of life (QoL) in Indian adolescent patients remains undocumented. The study was undertaken to detect the impact of acne vulgaris in adolescents on the QoL using 2 questionnaires: The Children's Dermatology Life Quality Index (CDLQI) and the Cardiff Acne Disability Index (CADI).

MATERIALS AND METHODS

This was a hospital-based, prospective, cross-sectional, pre-structured, questionnaire-based study done on 140 consenting individuals, who attended the Acne Clinic of our Dermatology Outpatient Department. Acne vulgaris was graded using simple grading system. QoL was measured using a combination of skin disease-specific (Children's Dermatological Life Quality Index (CDLQI)) and acne-specific (Cardiff Acne Disability Index (CADI)) questionnaires.

RESULTS

The study population included 140 cases with a female to male ratio of 1.5:1. Comedones (123, 87.9%) were the most common type of lesion. Grade I acne was the most common clinical type (76.4%). There was a statistically significant difference between acne severity and gender. The overall mean CDLQI score (7.21 of max. 30) and the overall mean CADI score (4.8 of max. 15) were low, indicating a mild impairment of QoL among adolescents. Statistically significant association was noted between CDLQI and CADI scores and grade of acne. There was no statistically significant association noted between CDLQI and CADI scores and gender.

CONCLUSION

Though acne had impact on patient's QoL, it was less severe in our study. The CDLQI and CADI questionnaires represent simple and reliable instruments for the assessment of QoL among adolescents and should be incorporated when managing acne patients to provide better and appropriate care.

KEYWORDS

Acne, Children's Dermatology Life Quality Index (CDLQI), Cardiff Acne Disability Index (CADI), Adolescents.

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INTRODUCTION: Acne vulgaris is the most common dermatological condition encountered in adolescents.[1] More than 85% of adolescents suffer from acne and in 50% cases, it extends into adulthood.[2] Acne commonly involves the face. Facial appearance represents important aspects of one's perception of body image. Therefore, it is not surprising that a susceptible individual with facial acne may develop significant psychosocial disability.[3] Adolescence is a time of struggle for self-identity when teens and young adults have a need to look their best, they frequently have acne, which makes them feel and look their worst.[4]

WHO defines Quality of Life (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".[5] It provides a valuable insight into the debilitating effects of acne, that patients do not address themselves. Several general health-related quality of life (HRQoL) measures and acne specific HRQoL questionnaires have been developed. Finlay and Khan developed the widely used Dermatological Life Quality Index (DLQI), for use in research studies and routine clinical practice to assess changes in HRQoL, as it is a sensitive measure.[6] Although the general measures serve the purpose of assessing the impact of dermatologic conditions on

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patient's life, acne-specific HRQoL assessment can offer a focused insight into the negative effects of acne. It is the most sensitive way to determine the impact of acne and its effects on patients while excluding irrelevant symptoms. Cardiff Acne Disability Index (CADI), was developed to quickly assess the level of disability caused by acne.[6] There is a dearth of published information on the impact of acne in adolescents on Indian patients which need to be assessed. The aim of this study was to determine the impact of acne vulgaris on the quality of life in adolescents.

MATERIALS AND METHODS: It was a hospital-based, prospective, cross-sectional study done in 140 consenting individuals, conforming to the inclusion and exclusion criteria who attended the acne clinic of the Department of Dermatology for a period of 2 years from August 2011 to July 2013. Individuals between 13 and 18 years of age with a clinical diagnosis of acne vulgaris were included in the study after obtaining informed written consent. Patients suffering from medical disorders or on topical and systemic drugs known to predispose them to acne or likely to interfere with assessment of acne, and nonconsenting patients were excluded.

A detailed history pertaining to socio-demographic data, presenting complaints, duration of acne, personal history/factors aggravating acne, presence of medical/surgical diseases, family, and treatment history were elicited. Examination for acne included the head and neck only. All the manifestations of acne from comedones to nodules were recorded. Acne vulgaris severity was graded using a simple grading system as follows[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.

QoL was measured using a combination of skin disease (CDLQI) and acne specific-questionnaire (CADI). The CDLQI and CADI questionnaires were used as the study instrument for this study after obtaining a formal written permission from Professor Andrew Y Finlay. CDLQI 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/school (questions 7), (e) personal relationships (questions 8 and 9), and (f) 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), keeping in mind the problems faced in the previous week due to the disease. Final CDLQI score is the sum of all scores (range 0–30). High scores indicate poor QoL. Results from 0–1 mean no effect of the disease on the patient's QoL, 2-5 mean small effect, 6-10 mean moderate effect, 11-20 mean great effect, and 21-30 mean a very important effect.[8]

CADI is a well-validated, self-reported questionnaire consisting of five questions with a Likert scale and four response categories (0-3). The five questions relate to feeling of aggression, frustration, interference with social life, avoidance of public changing facilities, and appearance of the skin all over the last month and an indication of how bad the acne is now. The final score ranges from 0 to 15. CADI scores were graded as low (0-4), medium (5-9), and high 10-15. High scores indicate a higher level of disability. CADI identifies the area of concern in patients with acne. The patient's response to the questionnaire is significantly correlated with the clinician's assessment of acne severity[9].

STATISTICAL ANALYSIS: The data collected was tabulated in Microsoft Excel Worksheet and computer-based analysis was performed using the Statistical product and service solutions (SPSS) 16.0 software (SPSS, Chicago, Illinois, USA). The categorical variables were summarised as proportions and percentages. The continuous variables were summarised as mean and standard deviation. The level of significance was set at $p<0.05$ and confidence interval, CI=95%. Statistical test used was Chi-square test.

RESULTS: The study population included 140 cases with a female to male ratio of 1.5:1. The mean age was 15.26 ± 2.51 years (ranging from 13 to 18 years). Furthermore, maximum patients (66%) were among 16-18 years. Duration of acne was <6 months in most cases (45%).

Type of Lesion: Comedones (123, 87.9%) were the most common type of lesion. Papules were seen in 76 (54.3%) patients followed by pustules (18, 12.9%), and nodules (5, 3.6%)

Grading of Acne: Grade 1 acne was the most common clinical type (76.4%), followed by Grade 2 and 3 (16.4% & 6.4%). Furthermore, males had more severe disease: Among Grade 3 acne, 66.7% were males, and only one patient had Grade 4 acne, which was a male. There was a statistically significant difference between acne severity and gender (p=0.013). [Table 1].

Scoring of Acne Based on CDLQI and CADI: The mean CDLQI score was 7.21±4.82 (ranging from 0 to 26) and the mean CADI score was 4.8±2.9 (ranging from 0 to 15). The most common CDLQI score observed was in the range of 2-5 (small effect) in 56 (40%) patients and that of CADI was 0-4 (low) in 84 (60%) patients, which implied that the majority of them had mild psychological impact. Statistically significant association was noted between CDLQI and CADI scores and grade of acne ($p= < 0.0001$ for CDLQI & $p= <0.0001$ for CADI respectively). [Table 2, Table 3]. The impact on quality of life increased with the facial acne severity. There was no statistically significant association noted between CDLQI and CADI scores and gender ($p= 0.9$ for CDLQI & $p= 0.5$ for CADI respectively). [Table 4, Table 5]. This is an important finding, as there may be a perception among health professionals that facial acne will have less impact on males and also showed that males were concerned about their acne.

Based on the specific responses of CADI, 60.7% of the adolescents reported that they felt aggressive, frustrated or embarrassed as a result of having acne. [Table 6].

Acne severity Grade	Female n(%)	Male n(%)	Total n(%)
Grade 1	72(85.7)	35(62.5)	107(76.4)
Grade 2	9(10.7)	14(25)	23(16.4)
Grade 3	3(3.6)	6(10.7)	9(6.4)
Grade 4	0(0)	1(1.8)	1(0.7)
Total	**84(60)**	**56(40)**	**140(100)**

Table 1: Relationship between Acne Severity and Gender

X^2=10.71 p=0.01340.

CDLQI Score	Grade 1 n(%)	Grade 2 n(%)	Grade 3 n(%)	Grade 4 n(%)
No effect (0-1)	22(20.6)	3(13.1)	0(0)	0(0)
Small (2-5)	48(44.9)	7(30.4)	1(11.1)	0(0)
Moderate (6-10)	29(27.1)	8(34.7)	2(22.2)	0(0)
Great (11-20)	7(6.5)	2(8.7)	4(44.4)	1(100)
Very important (21-30)	1(0.9)	3(13.1)	2(22.2)	0(0)
Total	**107(100)**	**23(100)**	**9(100)**	**1(100)**

Table 2: Distribution of Acne Grading based on DLQI Score

X^2=40.57 p=0.00005.

CADI Score	Grade 1 n(%)	Grade 2 n(%)	Grade 3 n(%)	Grade 4 n(%)
Low (0-4)	73(68.2)	10(43.5)	1(11.1)	0(0)
Medium (5-9)	31(29)	9(39.1)	5(55.5)	0(0)
High (10-15)	3(2.8)	4(17.4)	3(33.3)	1(100)
Total	**107(100)**	**23(100)**	**9(100)**	**1(100)**

Table 3: Distribution of Acne Grading based on CADI Score

X^2=33.36 p=0.000008.

CDLQI Score	Male n(%)	Female n(%)	Total n(%)
No effect(0-1)	12(21.4)	13(15.5)	25(17.9)
Small(2-5)	21(37.5)	35(41.7)	56(40)
Moderate(6-10)	15(26.8)	24(28.6)	39(27.9)
Great(11-20)	6(10.7)	8(9.5)	14(10)
Very important (21-30)	2(3.6)	4(4.7)	6(4.2)
Total	56(100)	84(100)	140(100)

Table 4: Distribution of CDLQI Scores based on Gender

X^2=1.01 p=0.908.

CADI Score	Male n(%)	Female n(%)	Total n(%)
Low (0-4)	34(60.7)	50(59.5)	84(60)
Medium (5-9)	16(28.6)	29(34.5)	45(32.1)
High (10-15)	6(10.7)	5(6)	11(7.9)
Total	**56(100)**	**84(100)**	**140(100)**

Table 5: Distribution of CADI Scores based on Gender

X^2=1.348 p=0.5094.

CAD Question	Very much n(%)	A lot n(%)	A little n(%)	Not at all n(%)
1. As a result of having acne, during the last month have you been aggressive, frustrated or embarrassed?	4(2.9)	23(16.4)	58(41.4)	55(39.3)
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?	3(2.1)	18(12.9)	40(28.6)	79(56.4)
3. During the last month have you avoided public changing facilities or wearing swimming costumes because of your acne?	4(2.9)	8(5.7)	20(14.3)	108(77.1)
4. How would you describe your feelings (Concern) about the appearance of your skin over the last month?	10(7.2)	29(20.7)	66(47.1)	35(25)
5. Please indicate how bad you think your acne is now?	5(3.5)	22(15.7)	81(57.9)	32(22.9)

Table 6: Specific responses of Cardiff Acne Disability Index(CADI)

DISCUSSION: Adolescence is a time of physical, emotional, and social development. Acne is a common adolescent problem, affecting more than 85 percent of teenagers, as well as some adults.[10] Acne vulgaris is a chronic inflammatory disease of pilosebaceous unit. The pathogenesis is attributed to multiple factors such as increased sebum production, follicular hyperkeratinisation, proliferation of Propionibacterium acne within the follicle,

alteration of the quality of sebum lipids, regulation of cutaneous steroidogenesis, androgen activity, interaction with neuropeptides, and exhibition of pro and anti-inflammatory properties.[11] Although some consider acne to be merely a cosmetic problem, it may have significant and enduring emotional and psychological effects. Acne can negatively impact mood, self-esteem, and interpersonal relationships and may lead to depression and suicidal ideation.[12-14] There are studies assessing the impact of acne on QoL from various countries such as Cleveland,[15] USA,[16] Spain,[17] UK,[18] Iran,[19] Malaysia,[9] Southern Brazil,[20] and Greece,[8] whereas, studies on Indian patients are reported less frequently.[21]

The age group of acne vulgaris patients included in different studies done in this regard are variable. Most of the studies[9,18,22-24] have included an age group between 13 and 18 years and some studies[17,25,26] from 11 years and some[15,27] from 17 years. The present study included an age group between 13 and 18 years.

In this study, females were more commonly affected than males (ratio of 1.5:1). However, male students were found to have more moderately severe acne compared to female students. The findings are consistent with previous studies done in other countries.[9,28] Males tend to have more severe acne compared to females because they have oily complexion and their androgen levels are higher.[9]

In our study, the mean CDLQI score was 7.21 and the mean CADI score was 4.8 and majority of them had mild psychological impact. However, study by Jankovic et al[22] reported the overall mean scores for CDLQI to be 4.35 and for CADI to be 3.57 which is rather low and also reported that acne is associated with the impairment in HRQoL. Other previous studies performed among adolescents in other countries have also reported similar findings.[18,19,23]

This study demonstrated a statistically significant association between CDLQI and CADI scores and severity of acne. The impact on quality of life increased with the facial acne severity. This result is consistent with previous studies which also demonstrated a fairly good correlation between facial acne severity and CDLQI/CADI scores.[9,18,29] This implies that impact of acne on quality of life must be considered in the management of facial acne.

This study showed no statistically significant association between CDLQI and CADI scores and gender. The impact of acne on quality of life was similar between genders. This result is consistent with a previous study by Hanisah et al[9] which also found no significant difference in the CDLQI/CADI scores between the genders. This is an important finding, as there may be a general perception that facial acne will have less impact on boys and also stresses the fact that boys also experience psychological morbidity and were concerned about their acne. However, this contradicts results from previous studies which found that girls generally experience more psychological morbidity than boys.[22,30]

Cardiff Acne Disability Index helps to assess the quality of life in students with acne. The subscales include feeling of aggression, frustration, interference with social life, avoidance of public changing facilities and appearance of the skin. In this study, analysis of the subscales showed that 60.7% of the adolescents had particular difficulties in the areas of emotion (Felt aggressive, frustrated), and 43.6% had social interference/difficulties. Hanisah et al[9] reported difficulties in the areas of emotion (Felt aggressive, frustrated) in 71% of adolescents and social interference/ difficulties in 58.7% of adolescents respectively. A study among teenage Scottish schoolchildren reported that 50% of pupils were emotionally affected, 20% of pupils were affected in their personal and social lives and 10% avoided swimming and other sports because of their acne.[18] In this study, eleven students (7.9%) scored 10-15 in Cardiff Acne Disability Index which was equal to severely impaired. However, the median score of CADI was 4.9, which was low. This implied that overall the students were mildly affected psychologically. This could be due to the higher prevalence of mild acne among adolescents. Hanisah et al[9] also reported the median score of CADI to be 4, which was low.

CONCLUSION: Facial acne is common among adolescents and can cause major impact on their quality of life. There was a significant association noted between CDLQI and CADI scores and grade of acne. There was no significant association noted between CDLQI and CADI scores and gender, which means that males were also concerned about their acne. Most of the adolescents reported that they felt aggressive, frustrated or embarrassed as a result of having acne. The assessment of impact of acne on the QoL is essential, to detect those patients who are at increased risk of being negatively affected so as to treat them in a more integrated manner. Hence it is important for health professionals to incorporate QoL measurements when managing acne patients to provide better and appropriate care.

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