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Dermatology

Clinico-Epidemiological Study of Acne Vulgaris and Quality of Life Assessment

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Abstract: Acne is considered as the disorder of adolescence. Adult acne is defined as acne that may persist more than 25 years of age. It may persist in adolescence or occur sporadically as a late-onset type of adult acne. The main pathophysiomechanism have found adult acne to be multifactorial. This study is undertaken to analyze clinical features and psychological impact in adult acne. Methods: All patients with adult acne, more than 25years of age were included. Patients having rosacea were excluded from the study. A detailed history, clinical examination, and assessment of the quality of life with a standard structured questionnaire were performed. Among 100 cases of acne, females (81%) outnumbered males (19%). Majorities were housewives with flares during summer (44%) and aggravated by fairness creams and native medication. Family predisposition was seen in 30 cases. Cheeks (84%) were the commonest followed by chin (45%). Quality of life was affected in most cases, reporting frustration and interference with daily social life. Acne can either present as adolescent acne persisting in adulthood or can be late onset mainly affecting women on cheeks and chin. Though Acne is asymptomatic but is disfiguring, having a negative impact on quality of life and social interaction in these patients.
Keywords: Adult acne, females, QOL.

INTRODUCTION

Acne vulgaris is a common skin disease affecting up to 80% of adolescents and many adults at some stage [1, 2] Acne vulgaris is a chronic multifactorial inflammatory skin disorder in which there is an alteration in the pattern of keratinization within the pilosebaceous follicles.

It is characterized by comedones, erythematous papules, pustules and less frequently by nodules or pseudocysts. Acne affects both sexes and develops earlier in females than in males mainly due to early attainment of puberty. Severe forms of acne are seen more frequently in males but the disease is found to be more persistent in females. The severity of the disease varies from individual to individual and also depends on the various etiological factors [3]. Prevalence of adult acne makes up a large proportion of patients presenting for the dermatological evaluation. Main factors involved in the etiology of Acne are an increase in sebum production, a proliferation of the bacterium *Propionibacterium acnes*, and the production of peri-follicular inflammation, comedones formation, diet, medications, innate immunity, alterations in follicular keratinization and differentiation [4]. Sebum production is the main cause of acne in adults that is mainly influenced by various hormones most important being androgens. Androgen receptors lie in sebaceous glands and outer root sheath of the hair follicle; they regulate sebum secretion under the hormone influence. These fluctuations are the cause for premenstrual flare in women [5]. Other factors involved, such as insulin, insulin-like growth factor, glucocorticoids and adrenocorticotropic hormone.

Acne in people with age older than 25 years is called as adult acne. In patients with persistent adult acne with longer duration, the psychiatric impact has been observed and the impact is psychologically devastating. Complications of acne are scarring and psychosocial effects which persist for a long time even after lesions subside [6]. Examination of psychological impact in adult age group is important for 2 reasons: (1) adults are seeking treatment for acne at higher rates than in previous years and (2) adults may be affected by acne in unique ways (eg, college work, employment, or social functioning) [7-9]. Thus, it is more appropriate to study the psychiatric impact in adults than all ages. Acne and its complications are associated with greater psychological burden. Patients experience psychological burdens like depression, anxiety, and low self-esteem because of acne. Acne vulgaris remains one

of the most common diseases affecting humanity. Measurement of its impact on patient's quality of life QOL is important using validated and age-appropriate measures along with an objective assessment of acne status. The degree to which both active acne and scars from previous acne cause psychological or emotional harm; varies from patient to patient and does not correlate with clinical severity. Depression and anxiety are more prevalent among patients with acne than in control subjects. Other underlying factors such as patient's age, gender, clinical severity of disease, family, peer support systems, personality coping styles and underlying psychological status of individual plays an important role in psychological impairment. Hence we in the present study tried to study the various epidemiological factors in acne. Clinical presentation of acne in adults and effect of adult acne on the quality of life

MATERIALS AND METHODS

This is a cross-sectional study of 100 cases. All the patients presenting with Adult Acne attending outpatient department of DVL, Prathima Institute of Medical Sciences, Karimnagar were included. Institutional Ethical committee permission for the study was obtained. Written consent was obtained from all the participants of the study. The inclusion criteria were all the patients diagnosed as acne vulgaris (male and female) aged 25 years and above. The exclusion criteria were patients with Rosacea, those not willing to participate and those unwilling to answer the QOL questionnaire and those not willing for follow up. A detailed history and thorough clinical examination with stress on aggravating factors epidemiological data were collected from all the patients in detail and grading of acne done according to simple clinical grading based on the predominance of lesions. The impact of Acne on Quality of Life was assessed. There are several dermatology questionnaires that help to determine the impact of various skin diseases on the quality of life of a patient. Psychological impact in acne can be measured by using various dermatology indices like Acne Disability Index (ADI), Cardiff Acne Disability Index (CADI), Assessment of the Psychological and Social Effects of Acne APSEA, Acne Quality of Life AQOL, Acne-Quality of Life Index QOLI and skin index [9]. Initial and important step in the management of acne is patient's education and grading acne with subsequently discussing patient's expectations. We in the present study used a questionnaire by using Dermatological Life Quality Index (DLQI) Score.

The aim of this questionnaire is to measure how much your skin problem has affected your life OVER THE LAST WEEK. Please tick (✓) one box for each question.

1.	Over the last week, how **itchy**, **sore**, **painful** or **stinging** has your skin been?	Very much A lot A little Not at all	❒ ❒ ❒ ❒		
2.	Over the last week, how **embarrassed** or **self conscious** have you been because of your skin?	Very much A lot A little Not at all	❒ ❒ ❒ ❒		
3.	Over the last week, how much has your skin interfered with you going **shopping** or looking after your **home** or **garden**?	Very much A lot A little Not at all	❒ ❒ ❒ ❒	Not relevant	❒
4.	Over the last week, how much has your skin influenced the **clothes** you wear?	Very much A lot A little Not at all	❒ ❒ ❒ ❒	Not relevant	❒
5.	Over the last week, how much has your skin affected any **social** or **leisure** activities?	Very much A lot A little Not at all	❒ ❒ ❒ ❒	Not relevant	❒
6.	Over the last week, how much has your skin made it difficult for you to do any **sport**?	Very much A lot A little Not at all	❒ ❒ ❒ ❒	Not relevant	❒
7.	Over the last week, has your skin prevented you from **working** or **studying**? If "No", over the last week how much has your skin been a problem at **work** or **studying**?	Yes No A lot A little Not at all	❒ ❒ ❒ ❒ ❒	Not relevant	❒
8.	Over the last week, how much has your skin created problems with your **partner** or any of your **close friends** or **relatives**?	Very much A lot A little Not at all	❒ ❒ ❒ ❒	Not relevant	❒
9.	Over the last week, how much has your skin caused any **sexual difficulties**?	Very much A lot A little Not at all	❒ ❒ ❒ ❒	Not relevant	❒
10.	Over the last week, how much of a problem has the **treatment** for your skin been, for example by making your home messy, or by taking up time?	Very much A lot A little Not at all	❒ ❒ ❒ ❒	Not relevant	❒

Please check you have answered EVERY question. Thank you.

Fig-1: Sample of the questionnaire given for each patient (translated accordingly in the local language

The Dermatology Life Quality Index questionnaire is designed for use in adults, i.e. patients over the age of 16. It is self-explanatory and can be simply handed to the patient who is asked to fill it in without the need for detailed explanation. It is usually completed in one or two minutes.

SCORING

The scoring of each question is as follows:
Very much scored 3
A lot scored 2
A little scored 1
Not at all scored 0
Not relevant scored 0
Question 7, 'prevented work or studying' scored 3
The DLQI is calculated by summing the score of each question resulting in a maximum of 30 and a minimum of 0. The higher the score, the more quality of life is impaired.

HOW TO INTERPRET MEANING OF DLQI SCORES

0 – 1: no effect at all 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

RESULTS

Adult acne accounted for 24.5% (178) of total acne outpatients 724. The age of the patients varied from 25 - 45 years. The maximum number of patients belonged to the age group of 26-30 years accounting for 68%, followed by 31-35 years accounting for 19%, the third common group affected is 36 - 40 years (6%). Least affected are from 41 - 45 years of age. We also observed that the number of patients reduced with an increase in age. In the present study, 19 were males (19%) and 81 females (81%) (M: F- 1:4.5) Females were more commonly affected and statistically significant. Majority of the females and (53%) males (15%) affected were in the age group of 26-30 years.

Table-1: Age distribution Number of cases

	Number of cases			Percentage%		
Age in yrs	Male	Female	Total	Male	Female	Total
<25	0	4	4	0	4	4
26-30	15	53	68	15	53	68
31-35	1	18	19	1	18	19
36-40	1	5	6	1	5	6
41-45	1	2	3	1	2	3

In the present study, the majority were housewives (38%), followed by manual workers (31%) and professionals (10%). The rest 21% was comprised of the agriculturist, business, and students. The duration of the lesions varied from 1month to 15 years. Maximum patients presented early within a period of 6 months showing concern and increasing awareness about the disease. Positive family history was found in only 31 (31 %). The majority of first degree relatives along with positive family history 19% had a history of similar lesions in the parents, (10%) in siblings and 2% with parents and siblings.

Table-2: Duration of disease in patients

Duration of disease	No. of patients
0-6months	41
6m-2yr	32
2-5yr	21
5-8yr	3
8-11yr	1
11-15yr	2

Table-3: Aggravating factors for acne

Factors	No. of cases	Percentage
Cosmetics	38	38%
Variation in summer	53	58%
Variation in winter	8	8%
Premenstrual flare	21	21%
Stress	41	41%
Medication	13	13%

In the 100 patients studied, 38 patients were found using topical application, 41 % patients had flares of acne with periods of stress. Out of the 100 patients, 53% had an exacerbation in summer and 8% in winters, so total seasonal variation was seen in 61 patients (table 3). Among the total 21 % experienced a premenstrual flare. In our study, we found the most common site was found to be cheeks (88%) followed by perioral area (49%) and my forehead (30%) shown in table 4.

Table-4: Location (sites) of the acne in patients

Sites	Number of cases	percentage
Cheeks	88	88
Peri-oral	49	49
Mandibular	18	18
Forehead	30	30
Back	14	14
Total	100	100

In our study, we found the most common site was found to be cheeks (88%) followed by perioral area (49%) and on the forehead (30%). In the present study, among 100 patients studied, 37 (37%) had scars, of which (7%) patients had ice pick scars, 10 (10%) had atrophic scars, 2 (2%) had keloid, (10%) had box scar scarring (15%) had pitted scars.

Table-5: DLQI Scores in the patients

Total Score	Frequency	Percentage
0 - 1	1	1
2 - 5	15	15
6 - 10	16	16
11- 20	59	59
21 - 30	9	9
Total	100	100

According to the scoring - % had no effect on their life. 15% had a small effect on their life 16% had a moderate effect on their life, 59% of patients had a large effect on their life. (p 0.000) , 9% had an extremely large effect on patients life. Maximum Patients presented with Grade II adult acne (61 %) followed by grade Ill (27%). Grade IV (severe) seen in few cases. Quality of life was assessed through a preformed questionnaire, affected in most patients but women more affected.

DISCUSSION

Acne is a chronic inflammatory illness of the pilosebaceous follicle. It is a disorder commonly seen in adolescence which may persist in adulthood or occurs sporadically in adults. A number of studies have been carried out on adolescent acne but actual prevalence of adult acne has not been well defined. Adult acne accounted for approximately 7.4% of the total outpatients at our center. A survey by Shen Y found that 25% of the study population of Chinese had adult acne [11]. We observed that the maximum patients belonged to the age group of 26-30 years(68%), followed by 31-35 years (19%) and 36-40 years(6%). Similar age distribution was observed by Goulden et al; [12] Eighty-one percent of our study group was females and Nineteen percent were F/M ratio was 8:2. This observation was similar to other studies in which adult acne affected women more than men and the disparity increased with age [9, 12]. Our study group comprised of patients more than 25 years of age. Similar inclusion criteria were seen by Addor Fa *et al*. [13]. However other studies included both types of persisting and late-onset acne. [7, 12] The distribution according to occupation was housewives (38%) followed by unskilled workers (31 %), professionals (10%), agriculturist (7%), Business (7%), Student (7%). The duration of the lesions varied from l month to 15years in our study. Similar results were obtained in a study by Niti Khunger *et al*. [14] Maximum patients 78 presented from 6 months to 1-year showing concern and awareness about the disease.

Acne is not an inherited condition, though has an inherited predisposition. Involvement of cytochrome P-450-1A1 and gene for steroid 21-hydroxylase are documented. 104 Positive family history is obtained in 40% of patients and correlates with more severe disease.105 There is higher concordance rate among identical twins. In our study, positive family history was seen in a total of 31% of our patients. Our study observed moderate grade (H) and severe grade(HI) to be the most common grades of Adult acne succeeded by mild to moderate (grade I), similar results were observed by Addor Fa et al; [13]. We noticed various factors aggravating acne such as cosmetics, stress and premenstrual flare. Among the various factors stress (41 %) was found to be the most common cause followed by cosmetics (38%) and pre-menstrual flare (21%) in comparison to other studies [11, 15]. The common

topical products used by our study group were Fairness creams, native medication and potent steroids like betamethasone, clobetasol. Few of our patients experienced premenstrual flare similar to a Chinese study where the premenstrual flare was found in 38.5% patients of late-onset type adult acne. The other investigators have found more cases with premenstrual flare. There was noticeable seasonal variation in our patient group. The study revealed that acne aggravated more in summer (53%) than in winter (8%) similar to a study by Sardana K *et al*. [16].

We observed an increased frequency of consumption of oily food (42.9%), chocolates (30.7%), ice creams (25.7%), and milk (6.4%) not to be statistically associated with the QOL scores. The reason may be that though there is consumption of foods which may be associated with acne, the quantity, and frequency of high glycemic food intake are much less when compared with the western countries due to the difference in dietary habits. Salomone C *et al.* [17] and Anderson [18] had observed a negative association between food and acne. Smith *et al.* [19] showed the association of acne with a high glycemic index. There are studies assessing the impact of acne on QOL from various countries such as USA, Spain, UK, Iran, Malaysia, southern Brazil, and Greece; whereas, studies on Indian patients are reported less frequently. Comparison of prevalence between different studies is difficult because of differences in the questionnaire design, study setting, and population characteristics. Clinically DLQI has been applied in various dermatoses such as atopic dermatitis, psoriasis, generalized pruritus and urticaria [20, 21]. In a study by Cresce ND *et al*. [22] the impact of HRQOL acne and rosacea was studied and the impact was similar to asthma, epilepsy, diabetes, back pain, arthritis and coronary heart disease. DLQI scores for acne ranged from 2 to 17.7 and for rosacea ranged from 4.3 to 17.3; the DLQI scores for psoriasis ranged from 1.7 to 18.2. This shows that quality of life in acne is affected as much as in psoriasis [22]. Psychological impact of a patient is measured by standard questionnaire as developed by Finlay and Khan or can be evaluated by answering open-ended questions about their behavior [10]. As per the DLQI score there was moderate to extremely large impact on the Quality of Life affecting 75.1% of patients. The DLQI was increased in many patients irrespective of grades of acne. Gupta *et al*. also reported that there was no association between the clinical severity of acne and psychological morbidity findings similar to our study. Female patients in our study had higher mean DLQI scores than male patients ($p<0.05$), this implies that women might be more concerned about the visual effects of their acne 82 lesions than men would be. Comparable results obtained by Kulthanan *et al.* [6] Most patients were embarrassed because of their skin condition which affected their relationship with partners, friends and also their leisure activities [7]. Acne as a major problem was seen in most of the individuals. Few open-ended questions were put forward to the patients about their thought process and the disease. The study revealed that most patients thought about acne throughout the day and spent money on various treatment regimens and visited various local doctors incurring substantial costs. We could not estimate the economic impact of acne on the patient. We should not underestimate QOL impairment in acne patients. A simple questionnaire (DLQI) helped to recognize the presence of psychiatric distress. Counseling and support is a critical factor, with or without treatment.

CONCLUSION

Acne can either present as adolescent acne persisting in adulthood or can be late onset mainly affecting women on cheeks and chin. Though Acne is asymptomatic but is disfiguring, having a negative impact on quality of life and social interaction in these patients. The negative impact was seen more in women because of their consciousness about their appearance. Acne made them more embarrassed about their physical appearance and affected relationship with family and friends leading to social withdrawal. The psychological impact of acne has been underestimated but in our study, we found the huge impact on women. These factors need to be addressed for the treatment of acne in adults.

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