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Evaluation of Acne Severity and Its Impact on Young Adults.

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ABSTRACT

This study was conducted to evaluate the severity of acne and acne scarring and its impact on quality of life among fifty-five students in "Foundation Course" of Quest International University Perak, Malaysia, aged between 18-22 years. Among the students, 44 female and 11 male with the acne lesions were evaluated, by using Cardiff Acne Disability Index (CADI), and the variables like weather, stress, etc. were also correlated. More female students reported worsening of acne lesions during hot weather (36.4%), stress (63.6%) and usage of cosmetics (54.5%) than male students (9.1%, 36.4% and 9.1% respectively). They also had premenstrual aggravation of acne (56.8%) and thinning of scalp hair (45.5%). The clinical severity of acne and atrophic scarring were mild to moderate grade in both genders and more number of females had post acne pigmentation (77.3%) than males (45.5%). There was strong positive correlation between the clinical severity of acne and atrophic scarring ($r^2=26.16\%$; $p=0.0004$) and pigmentation ($r^2=24.14\%$; $p=0.0007$) in females. They also had significant correlation of the CADI with subjective perception on impact of acne ($r^2= 23.23\%$; $p=0.0009$) such as disfigurement, psychosocial and failure of treatment. Males showed significant correlation of clinical severity of acne to stress ($r^2=38.55\%$; $p=0.03$), atrophic scar ($r^2=86.75\%$; $p<0.0001$) and CADI ($r^2=42.54\%$; $p=0.02$). This study exhibited that the quality of life in young adults with acne had more psychological and psychosocial impact in both genders.

INTRODUCTION

Acne is a common worldwide skin disease that affects mainly individuals between the ages of 12–24 years and can persist or develop over time to affect adults older than 20 years of age [1].

Of overall US population the acne prevalence estimate is about 13%, out of which approximately a third had moderate-to-severe involvement and men tended to have a higher prevalence and severity of acne than women [2]. The prevalence of acne vulgaris in Malaysia is about 85% [3]. During adolescence, acne vulgaris is more common in men than in women. In adulthood, acne vulgaris is more common in women than in men [4].

Genetic factors, stress, and possibly diet may influence the development of acne[5]. Facial appearance represents the important aspect of one's perception of body image, which can have a major impact on one's life affecting the overall quality of life (QoL)[6]. In this study the QoL was assessed by one of the index such as Cardiff Acne Disability Index (CADI).

MATERIALS AND METHODS

This cross-sectional study was conducted among the fifty-five students in 'Foundation course' of Quest International University Perak, Malaysia, between the age group of 18-22 years. The students with acne lesions (44 female and 11 male) were evaluated for the acne severity and for the Quality of Life by the Cardiff Acne Disability Index (CADI). The variables such as the factors influencing acne, clinical severity of acne and CADI were correlated among the students.

RESULTS

The subjects participated in this study were examined for acne lesions in the face and neck. The mean age of the students was 19.31 ±1.43 years. The majority of the students were Indians 38 (69%). Chinese 13 (24%), followed by Malays 4 (7%) and their acne lesions were rated by the researcher using the global system of US FDA including IAA grading and global acne scar grading system^[7].

More females reported usage of cosmetics and had greater association of acne lesion with hot weather and stress than males (Table1). About half of females had premenstrual aggravation of acne (56.8%) and general thinning of scalp hair (45.5%) which was not associated specifically to acne severity. More females had concern for disfigurement of face (21%), psychosocial impact (9%) and for both disfigurement and psychosocial impact (11%), whereas males considered each of the factor (disfigurement and psychosocial impact) equally (18% each).

Table 1: Comparison of acne severity and its sequel among the genders

Variables		Female n(%) (n = 44)	Male n(%) (n=11)
Acne severity	Mild	15(34.1%)	5(45.5%)
	Moderate	21(47.7%)	4(36.4%)
Post acne atrophic scar	Mild	23(52.3%)	6(54.5%)
	Moderate	13(29.5%)	3(27.3%)
Post acne Pigmentation		34(77.3%)	5(45.5%)

The severity of acne lesions vary in both genders, which was more severe in females (moderate grade); and also had more facial pigmentation than in males (Table1) and hence males did not perceive the impact of acne. Both genders had almost mild grade facial acne atrophic scarring, among the students eight females and two males had comedonal acne (neither had inflammatory lesion (comedones) nor scarring). The clinical severity of acne closely associated with scar and pigmentation especially more in females. Among the students more students had higher prevalence of severity of acne lesions and scar in the age of 19 years. The subjective perception of acne was associated with acne severity mainly on the psychosocial impact.

Cardiff Acne Disability Index

The CADI was scored and the maximum scores were 15 among female students and 10 in male students. The median score was 5.7, which implied that the majority of them had moderate psychological impact. Based on the specific responses of CADI, both genders reported that they felt aggressive, frustrated or embarrassed and males had more social interference as a result of acne. More females perceived the problem of acne and had more psychological impact (Table 2).

Table 2: Specific responses of Cardiff Acne Disability Index (CADI) among genders

Specific responses of CADI	Frequency (n) & Percentage (%)	
	Female (n=44)	Male(n=11)
Felt aggressive, frustrated	35 (80%)	8(73%)
Social interference	28 (64%)	8(73%)
Avoidance of public changing	12(27%)	5(45%)
Psychological state	41(93%)	7(64%)
Subjective assessment of acne severity (perceived as problem)	37(84%)	7(64%)

There was strong correlation (Pearson correlation coefficient) between the clinical severity of acne and atrophic scarring ($r^2=26.16\%$; $p=0.0004$) and pigmentation ($r^2=24.14\%$; $p=0.0007$) in females. They also had significant positive correlation of the Cardiff acne disability index (CADI) with subjective perception on impact of acne ($r^2= 23.23\%$; $p=0.0009$). Males showed significant correlation of clinical severity of acne to stress ($r^2=38.55\%$; $p=0.03$), atrophic scar ($r^2=86.75\%$; $p<0.0001$) and CADI ($r^2=42.54\%$; $p=0.02$).

DISCUSSION

Acne vulgaris may be present at any age group, even in the newborn is still under the influence of maternal hormones and the androgen-producing portion of the adrenal gland is disproportionately large. This neonatal acne tends to resolve spontaneously. Adolescent acne usually begins with the onset of puberty, when the gonads begin to produce and release more androgen hormone. The androgen-mediated stimulation of sebaceous gland activity leads to abnormal keratinization leading to follicular plugging (comedo formation), proliferation of *Propionibacterium acnes* within the follicle, and inflammation [8, 9, 10].

Acne is not limited to adolescence, 20% of women and 5% of men at age 25 years have acne. By the age of 45 years, 5% of both men and women still have acne [11]. In our study more percentage of females had active acne lesions than males.

The main underlying cause of acne is a genetic, an autosomal dominant pattern; the following are other aggravating factors: cosmetic agents and hair pomades may worsen acne. Medications that can promote acne development include steroids, lithium, some antiepileptics, and iodides.

In this study, usage of cosmetics especially by females was reported. Neither females nor males had any drug intake either in the form of treatment of acne or any other illness. Other endocrinal disorders associated with excess androgens may trigger the development of acne vulgaris, like congenital adrenal hyperplasia & polycystic ovary syndrome; even pregnancy may cause flare-up acne lesions [12]. In this study most of the female students had no irregularity of menstrual cycle or influence of hormone intake.

In this study, more female students reported worsening of acne lesions during hot weather (36.4%), stress (63.6%) and usage of cosmetics (54.5%) than male students (9.1%, 36.4% and 9.1% respectively).

IAA grading of acne severity [13,14]	
Mild acne (Grade I) Predominance of comedones	Comedones < 30 , Papules <10, no scarring
Moderate acne (Grade II)	Comedones any number, Papules >10, Nodules <3, Scarring \pm
Severe acne (Grade III)	Comedones any number, Papules any number, Nodules >3, Scarring \pm

Clinical assessment of acne scars

Scars are considered to be more visibly disfiguring and there are specific scar types based on size and depth of involvement of epidermis: atrophic, hypertrophic and mixed. Atrophic scars with diameter less than 2 mm; U-shaped atrophic scars with a diameter of 2-4 mm; M-shaped atrophic scars with diameter greater than 4 mm. Hypertrophic scars with a less/more than 2-year duration [7].

Grading of acne scars

The current grading of scarring is based on Global Acne Scarring Classification, which is a four-category qualitative system based on scar morphology and ease of masking by makeup or normal hair patterns [7]. Severity levels progress from macular scarring (grade 1), mild atrophic or hypertrophic scarring that may not be evident at 50 cm or greater and may be adequately masked by makeup or hair patterns (grade 2), moderate atrophic or hypertrophic scarring obvious at social distances and not easily masked (grade 3) and severe atrophic or hypertrophic scarring (grade 4) [15,16].

In our study, however, IAA grading of acne severity, global acne scarring classification and CADI as an index of Quality of Life (QoL) were combined for the evaluation of acne and was more practical. According to this study the clinical severity of acne was moderate grade in females and many of them had more post-acne pigmentation (77.3%). Males had mild grade of acne with less pigmentation (45.5%). Hence female students in this study had more impact on acne perception and on CADI for their severity of

acne lesion perhaps for increased post-acne scars and pigmentation when compared to males. The students mainly had various types of atrophic scars than hypertrophic or keloid scars.

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. The CADI is designed for use in teenagers and young adults with acne. It is self-explanatory and simple to complete it without the need for detailed explanation. Accordingly, CADI, one of the validated indices or abbreviated versions of the parent instruments of practical use^[6,9]. Self-reported QoL measures provide a means of obtaining objective, structured information from subjects on the impact of acne.

CONCLUSION

In our study, more than 50% of the subjects indicated the influence of stress impact on acne, hence the study was important indeed to evaluate the clinical severity of acne with the extent of disturbed quality of life among young adults. More female students had worsening of acne lesions during hot weather, stress, premenstrual aggravation, thinning of scalp hair and many of them used cosmetics than their counterpart. The clinical severity of acne and post acne pigmentation was echoed in the subjective perception on impact of acne such as disfigurement, psychosocial impact among females. The complication of acne lesions either the scar formation or post inflammatory hyperpigmentation were less in severity among males. Hence they perceived less the problem of acne but they fingered more impact as social interference as per CADI. This study exhibited the significant disability in the quality of life due to the impact of acne among young adults.

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