

Assessment of depression in patients of acne vulgaris and its correlation with severity of acne, postacne scarring and gender

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Abstract *Objective* To determine level of depression and correlate it with gender, duration, severity and scarring in patients having acne vulgaris.

Methods All the patients of acne vulgaris over a time period of one year were included in the study. Beck Depression Inventory (BDI) scores were used to assess depression levels. Grading of acne and postacne scars was done based on consensus criteria. SPSS software was used to determine Pearson correlation between different variables.

Results Males had more significant scarring compared to females. BDI scores significantly correlated with acne severity, duration of acne and post acne scarring. Negative correlation between BDI scores and education level was also noticed.

Conclusion In a patient of acne vulgaris proper attention should be paid towards psychological impairments and patient's self-assessment of depression levels. Prompt and effective treatment should be instituted for acne vulgaris, as well as, postacne scarring. Improving education levels may alleviate severity of depression in patients of acne vulgaris.

Key words

Beck Depression Inventory (BDI) score, acne, depression, gender-based differences.

Background

Acne vulgaris (AV) is a chronic inflammatory disease of the pilosebaceous follicles, common in adolescents, characterized by comedones, papules, pustules, cysts, nodules, and occasionally scars.¹ Although, AV usually starts in adolescent and frequently resolves by the mid twenties,² prevalence of significant AV in boys and girls aged between 14 to 16 years is 56% and 45%, respectively, whereas prevalence of moderate to severe acne is 11%.² A peak in

prevalence and severity occurs between 14 to 17 years in females and 16 to 19 years in males.³ A study from USA indicated that the prevalence by mid-teens is virtually 100%.⁴

Twenty percent teenagers have AV of sufficient severity to seek medical help.⁵ Clinically important depression and anxiety have been reported in 18% and 44% of acne patients, respectively.⁶ Furthermore, 6% of patients having AV in one study reported active suicidal ideation.⁷ In a study, patients with AV had greater impairment in mental health scores compared with those with asthma, epilepsy, diabetes, back pain, arthritis or coronary artery disease.⁸ Similarly, acne patients reported higher

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depression and anxiety scores compared to psoriasis patients and those attending oncology or general dermatology clinics.⁹

The Beck Depression Inventory (BDI) is a valid and reliable measure of the intensity of depressive symptomatology and has been used extensively in research studies designed to assess the efficacy of pharmacological interventions and in the detection of depression in medical patients.^{10,11}

Primary aim of this study was to determine the level of depression in patients of AV and correlate severity of depression with gender, duration, severity and scarring of acne vulgaris.

Methods

All consecutive patients (n=250) who presented in dermatology department of a medical college for treatment of AV from April 2012 to March 2013 were included in the study. Exclusion criteria were illiterate patients, patients aged <14 years of age, patients having any other chronic dermatoses or systemic illness which can result in depression in a patient.

Demographic details of all patients were recorded in a standardized proforma (specially designed for the study). These patients were asked to fill the BDI after taking an oral informed consent. Acne grading was done according to consensus conference criteria into grade 1, 2 or 3.¹² Postacne scars were graded from 1 to 4 as per a qualitative acne scar grading scale explained elsewhere.¹³ In the present study, grade 1 and 2 of acne scars were clubbed as non-significant scarring, and grade 3 and 4 were clubbed as significant scarring. On the basis of sites of acne, patients were divided in two groups, one having only facial involvement and other group also having significant (when patient was concerned about) extrafacial

involvement like shoulders, chest and back. We also noted education status of acne patients into six grades. Grade 1 as primary education (till 5th standard), 2 - upper primary (6th-8th standard), 3- high school level (9th-10th standard), 4- intermediate level (11th-12th standard), 5- graduate level and 6- postgraduate level. We noted BDI score and its interpretation separately in the proforma.

BDI is a multiple-choice questionnaire having 21 groups of statements with the score for each statement ranging from 0 to 3 and the total maximum score being 63. A score of 0-16 is considered as normal, 17-20 as clinically borderline depression, 21-30 moderate depression, 31-40 severe depression and over 40 is extreme depression. Similar to a few past studies, a score of ≥ 17 (at BDI) was taken as clinical depression in the present study.^{14,15}

Patients diagnosed with extreme depression and/or suicidal ideations were immediately referred to psychiatry department. Study statistics were done using SPSS 15.0 software. T-test was used to compare means and Fisher's exact test for comparing proportions. A p-value of <0.05 was taken as significant. Institutional Ethical Committee has approved this study.

Results

Three hundred twenty three patients of acne vulgaris presented in dermatology outpatient department during the study time period. Out of these, 73 patients were excluded due to various reasons. Hence, 250 patients were included in this study with a mean age of 19.89 ± 3.42 years. Out of 250 patients, 72 were females and 178 were males with the mean age of 20.09 ± 3.61 and 19.80 ± 3.37 years, respectively. Profile of male and female patients differed in acne severity, education level and postacne scarring. **Table 1** gives the education level of study

patients. Education level of females was significantly better than males ($p=0.016$).

As per **Figure 1**, moderate to severe acne was more common in males (88.2%) compared to females (36.1%), which was statistically significant ($p=0.0001$).

Figure 2 describes post acne scar grading in the patients. Scarring was seen in 149/178 (83.8%) of male patients and 47/72 (65.3%) of female patients ($p= .0021$). Significant scarring (grade 3,4) was more common in males (29.6%) compared to females (8.2%). This difference was statistically significant ($p= 0.0002$).

Significantly more males (42.7%) compared to females (11.1%) had extra-facial involvement ($P.0001$).

The mean BDI score for all patients was 13.30 with standard deviation of 9.30. There was no statistically significant difference between males and females (fisher exact test $p=0.7680$). About 33% of all acne patients were having clinical depression.

In this study we noted significant positive correlations of BDI scores with acne severity, duration of acne and post acne scarring (**Table 2**). Negative correlation of BDI score with education was also observed.

Discussion

In some patients with acne, the inflammatory response results in permanent, disfiguring scars from either increased tissue formation or due to loss or damage of tissue.¹⁶ Furthermore, if mild to moderately severe acne is left untreated, many of these patients develop moderate to severe

Table1 Description of the educational standard of patients in the study (n=250).

Education level	Male (n=178)	Female (n=72)	Total (n=250)
	N (%)	N (%)	N (%)
Primary	0 (0)	0 (0)	0 (0)
Upper primary	18 (10.1)	6 (8.3)	24 (9.6)
High school	50 (28.1)	15 (20.8)	65 (26)
Intermediate	91 (51.1)	35 (48.6)	126 (50.4)
Graduation	15 (8.4)	8 (11.1)	23 (9.2)
Postgraduate	4 (2.2)	8 (11.1)	12 (4.8)

Table2 Correlation of BDI scores with different parameters (n=250).

Variables		Spearman's correlation	Significance	Number
Acne grade	Male	0.135	0.073	178
	Female	0.440**	0.000	72
	Total	0.210**	0.001	250
Duration of acne	Male	0.125	0.096	178
	Female	0.256*	0.030	72
	Total	0.172**	0.006	250
Education	Male	-0.119	0.114	178
	Female	-0.197	0.097	72
	Total	-0.138*	0.029	250
Postacne scarring	Male	0.501**	0.000	178
	Female	0.457**	0.000	72
	Total	0.481**	0.000	250

**Correlation is significant at the 0.01 level (2-tailed).

*Correlation is significant at the 0.05 level (2-tailed)

Figure1: Acne severity grading in patients.

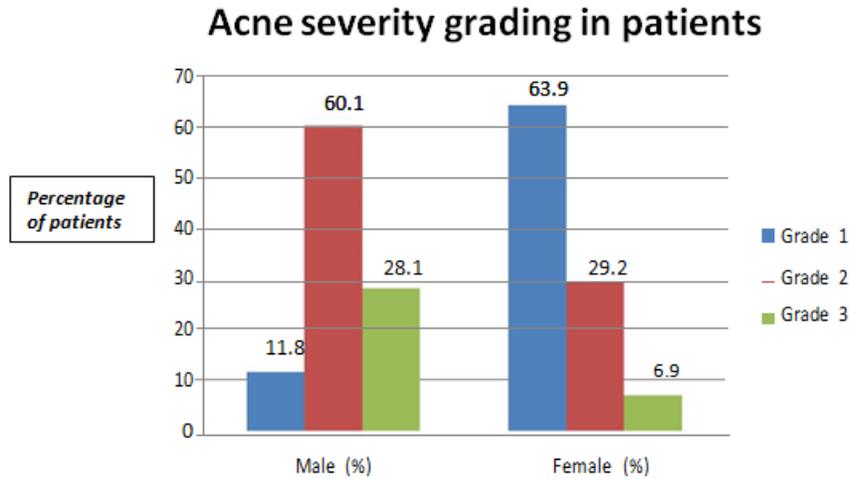
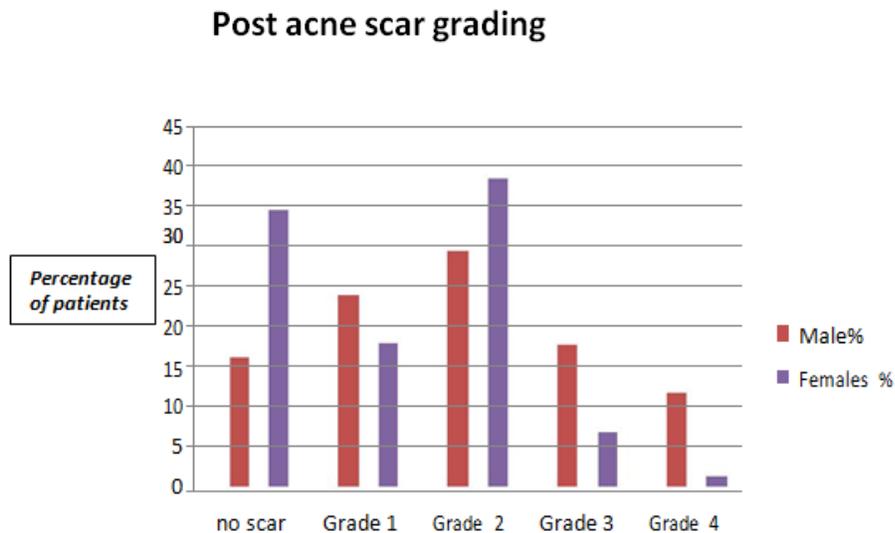


Figure2. Description of acne scarring in patients



type of acne with attendant complications.¹⁷ Although AV does not usually compromise general health, consistent studies have demonstrated that it may cause a negative impact on patient's quality of life, with psychological, social well-being, and functional abnormalities such as depression, anxiety, anger, low self-esteem, discomfort with self-appearance, embarrassment, self-consciousness, lowered self-concept, social withdrawal, including suicidal ideation, as well as, negative influence on school and work performance.¹⁸

Existence of even a minor lesion in this part may be unpleasant for the patient and seems large.^{19,20} Health professionals are sometimes dismissive of the psychosocial implications of dermatological disorders and lack an empathetic attitude towards the emotional suffering of their patients.²¹ The psychosocial impact of acne has been particularly well documented in adolescents.^{7,22,23} Compared with healthy individuals, patients with acne present with symptoms of high levels of anxiety and/or depression.²⁴

In our study the mean age was 19.89 ± 3.44 years, which is almost similar to an earlier study which showed mean age of 20.7 years.²⁵ Several studies have shown that patients with acne, in addition to their physical problem, also experience psychological complications.^{6,25} The chief psychological complication was depression, which occurred in 13% to 19% of cases.^{26,27} Few studies have reported a higher level of depression in 25.6% and 31.1% of acne patients respectively.^{24,28} In our study, we found yet higher percentage of acne patients (33.2%) having depression. The reason of this higher percentage in our study could be location of our hospital in relatively remote areas where difficult to treat and referred patients are seen more commonly.

The present study failed to show a statistically significant difference between male and female patients with respect to total BDI scores. Past studies also denied any significant difference between two genders for BDI scores.^{19,29,30}

An attempt was made to correlate depression with different variables and genders. It was interesting to note that BDI scores negatively correlated with levels of education. This signifies that the severity of depression decreases with increasing level of education. A logical reason may be that higher level of education enables an individual to think more rationally about her/his acne and hence decreases the possibility of depression.

Furthermore, severity of both, acne and acne scars had a significant positive correlation with BDI score. This implies that the level of depression tends to escalate with increasing severity of AV, which is supported by the findings of earlier studies.³⁰⁻³³ However, some other studies found no relation of acne severity with depression in past.^{34,35,36} Interestingly, contrary to the past studies, which denied any

relationship between depression and severity of AV with respect to gender, our study showed significant correlation between these two variables in females.³⁰

As per the findings of the present study, the greater the grade of acne scars the more the severity of depression was in an individual. Our study also showed statistically significant correlation of BDI score and grading of acne scars for both male and female patients. We have searched the literature, and found that no past studies have correlated depression with different grades of acne scars.

A significant positive correlation was also found between the duration of acne and the BDI scores in this study. A similar finding has been reported previously which suggested that the presence of long-term disease results in an increased risk of scarring and disproportionate psychological distress.³⁷

In the present study, whereas significantly more males had moderate to severe AV and/ or postacne scarring, severe depression occurred significantly more common in females. In other words, for the similar severity of AV or acne scarring, females have higher degree of depression compared to males.

The findings in the present study put forth a valid argument for an early and effective intervention for AV to prevent severe acne, more so in females. Moreover, treatment should also be initiated for acne scars at the earliest to decrease the psychological burden of AV. However, proper and adequate education is an effective tool to tackle this.

‘Psychological burden’ of the disease was contrary to the popular belief in our country which states that AV requires no treatment as it subsides with advancing age. True, AV does

subside in majority of patients, but the remnant scars leave an everlasting deleterious effect on the psychology of patient.

Conclusion

The level of depression in a patient with AV was directly related to the severity of acne, severity of postacne scarring, duration of disease and inversely related to education level of patients. This was more relevant for female gender. Hence, during evaluation of an AV patient, proper attention should be paid towards psychological impairments and patient's self-assessment of depression levels. Every patient of AV is different and requires individualized care, treatment and counseling.

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