Psychological Morbidity in Young Adults with Acne Vulgaris: A Hospital-based Study

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ABSTRACT

Introduction: Acne vulgaris is a disorder of pilo-sebaceous glands characterised by polymorphic lesions. Acne is highly prevalent among teenagers during which period body undergoes various developmental, hormonal and social changes. Acne may therefore affect the psyche of the patient leading to psychological morbidity.

Aim: To study the prevalence and gender-based variations of psychological morbidity in young adults with acne vulgaris.

Materials and Methods: This was a hospital-based observational cross-sectional study done in the Dermatology Outpatient Department, SMS Medical College and Attached Hospitals, Jaipur, India, from October 2012 to October 2013 on 660 acne patients. Patients aged 13-24 years clinically diagnosed with acne vulgaris were enrolled for the study and psychological morbidity was assessed by Goldberg's Health Questionnaire-12 scores (GHQ) and depression and anxiety were assessed using Beck Depression Inventory (BDI) scores and Hamilton Rating Scale for Anxiety (HAMA) scores, respectively.

Results: Among 660 acne patients, 71.51% were males and 28.48% were females. Female patients had mean±Standard Deviation (SD) age of 18.06±2.93 years and male patients had mean±SD age of 18.16±2.41 years. Among 188 females, mild, moderate and severe acne were observed in 40.96%, 48.40% and 10.64% cases, whereas, among 472 males, 37.92%, 38.35% and 23.73% had mild, moderate and severe acne, respectively. Psychological morbidity was observed in 92 (48.94%) females and 227 (46.09%) male patients. In the study population, 5.32%, 28.19%, 13.83%, 1.60% patients had minimal, mild, moderate and severe depression, respectively in female group whereas in the male group 21.19%, 16.10%, 7.84% and 2.97% patients had minimal, mild, moderate and severe depression, respectively. Further, 27.66%, 10.64%, 3.72%, 6.91% of female patients whereas 30.51%, 8.26%, 3.81%, 5.51% of male patients had mild, moderate, severe and very severe anxiety level, respectively.

Conclusion: The study assessed that acne affected self-esteem and confidence of the youth and can lead to mental health conditions such as anxiety and depression. The severity of depression and anxiety was linked with gender in the present study.

Keywords: Anxiety, Beck depression inventory score, Depression, Hamilton rating scale for anxiety score

INTRODUCTION

Acne is a common, self-limiting condition but may sometimes lead to psychological issues and/or disfiguring scars over the affected areas [1]. It is a pleomorphic disorder and may appear at any age, but majority of population (85%) have acne during 12-24 years of age [2-5].

Psychological issues associated with acne have been observed by many clinicians and multiple studies have been done in the past which supported a positive association between acne and emotional and functional wellbeing of the patient [3,5-7]. Aversion to social interaction, discontentment with self-appearance, reduced employment opportunities, low confidence and self-esteem have been documented in the past with patients with acne [7-9].

It may be difficult to predict the impact of acne on the psyche of the patient. The impact of the condition on a patient can be influenced by many factors which includes age, psychosocial developmental period, baseline self-esteem, individual coping abilities, clinical severity of the disease, family and peer support system, personality traits and other underlying psychopathology [7-10].

Adolescents are most susceptible to the negative psychological effects as they constitute the most prominent group having acne. Various studies have been done in past to evaluate level of depression and anxiety in acne patients using various scoring methods [1,3,5,6,9]. Studies have reported that patients with acne are at increased risk for psychological morbidity such as anxiety and depression irrespective of the degree of severity of acne [1,3,5,9-11].

It is impossible to assess acne's psychological and social impact in a particular individual by clinical assessments alone. Descriptive studies can be carried out to identify various risk factors as well as understand the burden of acne in a community for better management [12,13]. Thus, the study aimed to assess the prevalence and gender-based variations of psychological morbidity in young adults with acne vulgaris

MATERIALS AND METHODS

This was a hospital-based observational cross-sectional study which was conducted in the patients in Outpatient Department (OPD) of Dermatology, Venereology and Leprosy, SMS Medical College and Attached Hospitals, Jaipur, India, from October 2012 to October 2013 on 660 acne patients. The study was initiated after the approval of Institutional Ethical Committee (SMS/IRB/2012-13/48490).

Sample size calculation: Sample size was calculated using following formula,

$n = Z_\alpha^2 p (1-p)/E^2$

p=prevalence or proportion

Z_α=critical value of standard normal variate at α level of significance (at α=5%, Z_α=1.96)

E=Margin of error or permissible error

p=85%=0.85[5]

E=3%=0.03 (Absolute margin of error)

$n = (1.96)^2 \times 0.85 (1-0.85)/(0.03)^2 = 544.27$

n=544.27+108.85 (considering 20% drop out of study participants)

n=653.12

n=660 (rounded off near about ten)

Therefore, the total number of study participants has been taken as 660.

Patients presented with skin lesions characterised by comedones, papules, pustules, nodules and/or cysts were examined clinically and diagnosed for acne vulgaris [2].

Inclusion criteria: Patients diagnosed with acne vulgaris in the age group 13-24 years, literates such that he/she could understand the questionnaire and who gave written informed consent were included in the study.

Exclusion criteria: Patients suffering from chronic medical or surgical illnesses, who were taking antipsychotic medications and, oral isotretinoin, patients suffering from other chronic dermatological disorders and from organic brain syndrome were excluded from the study.

Study Procedure

A detailed demographic data was recorded along with history taking which included age and gender of the patients, age of onset of disease, duration of disease, family history present and treatment taken in past. Cutaneous examination was done and type of skin, distribution, morphology and severity of acne was analysed in each patient. The severity of acne was assessed using Pochi criteria into mild, moderate and severe as depicted in [Table/Fig-1]. If the number of lesions were <5 it was classified as 'few', if 5-15 then as 'many' and 15-30 lesions was taken as 'several', >30 taken as 'numerous'/'extensive' [14].

Papules/Pustules	Nodules	Acne severity
Few to several	None	Mild
Several to many	Few to many	Moderate
Numerous and/or extensive	Many	Severe

[Table/Fig-1]: Pochi criteria of assessing severity of acne vulgaris.

Psychological profile of all patients was evaluated using Goldberg's Health Questionnaire-12 (GHQ) scores [15]. It is a self-administered 12-item questionnaire in which respondent is asked to compare his recent state with his usual state. Interpretation of the answers is based on a four-point response scale scored using a bimodal method (symptom present: 'not at all'=0, 'same as usual'=0, 'more than usual'=1 and 'much more than usual'=1). Maximum score is 12 and cut-off score is 2 or more. The patients who met the GHQ criteria, was subjected to detailed evaluation of depression and anxiety by administering Beck Depression Inventory (BDI) score and Hamilton Rating Scale for Anxiety (HAMA) score, respectively [15-17].

Beck depression inventory is a 21-question multiple-choice self-report inventory, one of the most widely used instrument for measuring the severity of depression. Each question has a set of atleast four possible answer choices, ranging in intensity (0-4) as depicted in [Table/Fig-2a] whereas, BDI scores were calculated by summing all answers and interpretation was done as depicted in [Table/Fig-2b].

S. No.	Response	Score
1	I do not feel sad	0
2	I feel sad	1
3	I am sad all the time and I can't snap out of it	2
4	I am sad or unhappy and I can't stand it	3

[Table/Fig-2a]: Beck Depression Inventory scores against responses.

Anxiety is calculated using HAMA. The scale consists of 14 items, each defined by a series of symptoms, and measures both psychic anxiety (mental agitation and psychological distress) and somatic anxiety (physical complaints related to anxiety) [17]. Each item was scored on a scale of 0 (not present) to 4 (severe) as depicted in [Table/Fig-3a], while the final interpretation was done as depicted in [Table/Fig-3b].

S. No.	BDI scores	Interpretation
1	0-9	Minimal depression
2	10-18	Mild depression
3	19-29	Moderate depression
4	30-63	Severe depression

[Table/Fig-2b]: Interpretation of Beck depression inventory scores.

S. No.	Response	Score
1	Not present	0
2	Minimal	1
3	Mild	2
4	Moderate	3
5	Severe	4

[Table/Fig-3a]: Hamilton rating scale for anxiety score against responses.

S. No.	Total scores	Interpretation
1	<17	Mild
2	18-24	Moderate
3	25-30	Severe
4	>30	Very severe

[Table/Fig-3b]: Interpretation of Hamilton rating scale for anxiety scores.

STATISTICAL ANALYSIS

Information so gained and data collected was entered in Microsoft excel worksheet. Continuous variables were presented as mean±standard deviation (range), and categorical variables as frequency (%). Categorical variables were compared using the Chi-square test. For testing of continuous variables Student's t-test was used. The p-value <0.05 was considered statistically significant. Statistical analysis was done using Statistical Package for the Social Sciences (SPSS) software version 15.0 and advanced excels.

RESULTS

Among 660 acne patients, 71.51% were males and 28.48% were females with male to female ratio of 2.5:1. Mean±Standard Deviation (SD) age of female patients was 18.06±2.93 years and mean±SD age of male patients was 18.16±2.41 years. Majority of patients had onset of acne during 15-19 years of age (62.27%). Mean age of onset of acne was 16.46±2.48 years in male group and 16.10±2.51 years in female group. Mean duration of acne (months) was 19.5±12.3 months and 22.3±19.1 months in males and females, respectively. Both groups were comparable in terms of mean age, mean age of onset and duration of acne. Face was affected in 46.81% of females over 29.87% of males. Facial and extra facial involvement was significantly predominant among males (70.13%) than females (53.19%); 660 acne patients, 48.33% 35.64% females and 99.16% males had taken prior acne treatment. Acne was more prevalent in oily skin which constituted 84.84% of patients.

Severity of acne in both groups is depicted in [Table/Fig-4]. Male patients had more severe acne over females. Among 660 acne patients, 48.33% patients scored positively on GHQ-12 as depicted in [Table/Fig-5]. Though the prevalence of psychological morbidity was high in the study there was no gender difference among both groups.

The BDI scores is depicted in [Table/Fig-6]. The level of depression was high in the study group. There was almost same level of depression observed in acne patients with respect to gender in minimal, mild and moderate category. However, level of depression was significantly more in male patients in severe category.

Severity of acne	Female n (%)	Male n (%)	Chi-square	p-value
Mild	77 (40.96)	179 (37.92)	Mild-Moderate: 0.694	Mild-Moderate: 0.405
Moderate	91 (48.4)	181 (38.35)	Moderate-Severe: 14.943	Moderate-Severe: 0.0001*
Severe	20 (10.64)	112 (23.73)	Mild-Severe: 10.349	Mild-Severe: 0.0012*

[Table/Fig-4]: Gender-wise distribution of severity of acne.
*p-value <0.05 was considered statistically significant

Goldberg health questionnaire	Female n (%)	Male n (%)	Chi-square	p-value
<2	96 (51.06)	245 (51.91)	0.038	0.845
≥2	92 (51.06)	227 (46.09)		

[Table/Fig-5]: Prevalence of psychological morbidity in both gender.
(NS: Not significant)

Score of BDI	Sex	n (%)	Mean±SD	t-test	p-value
Minimal	Female (n=92)	10 (5.32)	6.10±1.60	0.246	0.806
	Male (n=227)	100 (21.19)	5.97±1.59		
Mild	Female (n=92)	53 (28.19)	12.38±1.58	0.746	0.457
	Male (n=227)	76 (16.10)	12.17±1.52		
Moderate	Female (n=92)	26 (13.83)	20.92±1.44	0.152	0.879
	Male (n=227)	37 (7.84)	20.86±1.53		
Severe	Female (n=92)	3 (1.60)	31.00±1.00	-2.183	0.045*
	Male (n=227)	14 (2.97)	31.86±0.54		

[Table/Fig-6]: Prevalence of severity of depression in both gender.
*p-value <0.05 was considered statistically significant

Gender-based distribution of anxiety is depicted in [Table/Fig-7]. Level of anxiety was high in study group. There was almost same level of anxiety observed in acne patients with respect to gender in moderate, severe and very severe category however, the level of anxiety was more in mild category in female patients and data was statistically significant.

Score of HAMA	Sex	n (%)	Mean±SD	t-test	p-value
Mild	Female (n=92)	52 (27.66)	12.56±2.412	4.453	<0.000*
	Male (n=227)	144 (30.51)	10.45±3.086		
Moderate	Female (n=92)	20 (10.64)	18.85±1.565	-0.046	0.963
	Male (n=227)	39 (8.26)	18.87±1.794		
Severe	Female (n=92)	7 (3.72)	25.29±0.488	-0.079	0.938
	Male (n=227)	18 (3.81)	25.39±3.398		
Very severe	Female (n=92)	13 (6.91)	32.00±0.408	-2.011	0.052
	Male (n=227)	26 (5.51)	32.65±1.129		

[Table/Fig-7]: Prevalence of severity of anxiety.
*p-value <0.05 was considered statistically significant

DISCUSSION

Acne vulgaris is a common skin condition in adolescence and during this phase of life youth undergo various physical, social and mental changes [5]. Acne lesions modify the individual's perception hence, there is a need to evaluate the impact of acne on patient's life to improve physician patient relationship and to give added perspective in the assessment of newer therapies and prompt referral to psychiatrist whenever required [2,3,5,6,9,10,13,18,19].

The study showed that acne was more prevalent in males. Similarly, Smithard A et al., reported prevalence of acne in 56% boys and 45% girls [20]. Aktan S et al., in their study too reported preponderance of acne in males [21]. Rao A et al., had also explored in their study that the mechanism and severity of acne was associated with androgens [22]. This is in contrast to some studies where majority

of study population were females, probably because females are more conscious of their appearance [18,19].

Acne usually starts in adolescence and the age group included in different studies done in this regard are variable due to geographical distribution and racial variations, which ranged from 12-30 years [5,6,8,9,12,13,16,18,19]. Some studies have shown that genetic factors influence susceptibility to acne which was in accordance with the index study [23,24].

Face was the most common site involved in the study, since it affects the appearance of an individual which make it more bothersome than acne at any other sites. Moreover, the greater preponderance of acne over the face may be because of higher amount of surface lipids and greater number of pilosebaceous units over the face [18,23]. In the study, oily skin was observed in 82.45% and 85.81% of female and male acne patients however no gender difference was observed. Klingman AM and Mills OH suggested that excessive oiliness in acne patients was due to hyperplasia of sebaceous glands and their increased secretions [25]. This was unrelated to gender as both male and female acne patients averagely excrete more sebum than normal subjects. As acne most often involves face, patients may undergo psychosocial distress because of progression of disease [26]. Occurrence of even a small lesion over face might be unpleasant [1]. Patients with acne have high levels of anxiety and depression as compared to healthy individuals [27].

Several studies have shown that patients with acne have a higher unemployment rate than others and are more susceptible to anxiety, depression, low mood, isolation from society, suicidal thoughts and even suicide itself [8,21,28]. Prevalence of anxiety and depression in patients with acne is different in various studies [3,5,9,21,27]. Earlier studies have reported 25.6% and 31.1% level of depression in acne patients [27,29]. While clinical anxiety have been reported as 47.82% and 68.3% in acne patients [5,27]. In the index study, authors found higher percentage of depression and anxiety (48.33%) in the study population. There was statistically significant difference observed between male and female patients with respect to severe depression category in BDI score and male acne patients were found to have more depression. Past studies did not report any significant difference between two genders for BDI scores [1,3,27]. There was gender difference observed with respect to mild anxiety category in HAMA score in the present study and females were found to have more anxiety which was in accordance to some studies done in past which supports that these disorders are more prevalent in woman [1,21,25].

Limitation(s)

The severity of depression and anxiety was not compared with severity and duration of acne.

CONCLUSION(S)

Every patient of acne is different and hence requires individualised treatment and care to assess the impact of the disease on the psychology of the sufferer. According to existence of some mental disorders in patients with acne timely evaluation and screening and prompt referral is required. This can be done by simple questionnaire such as GHQ score, BDI score and HAMA score on OPD basis, which are simple, easy to apply and less time consuming. Stress management, relaxation therapy and appropriate treatment of psychiatry co-morbidity in patients with acne is need of the hour and ultimately the relationship between acne and psychiatric morbidity is worth exploring as possible behaviour interventions can be useful in patients treatment management.

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