

Original Research Article

A Cross-Sectional Study of Quality of Life and the Prevalence of Depression and Anxiety among Patients with Acne Vulgaris Attending a Tertiary Care Centre

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ABSTRACT

Background- Anxiety depression, low self esteem, suicidal ideations have been reported in patients with acne vulgaris.

Objectives- To explore the quality of life and the prevalence of depression and anxiety among patients with acne vulgaris, and to study the correlation between severity of acne, depression, anxiety and quality of life.

Methods

Study design - Hospital Based Cross Sectional observational Study.

Setting - Department of Dermatology, Department of Psychiatry Mahatma Gandhi Medical College & Research Institute, Pondicherry.

Subjects - All clinically diagnosed cases of acne vulgaris within the age group of 15-35 years belonging to both genders were taken up for study.

Procedure - A detailed history and clinical evaluation was done after obtaining consent from all the participants of the study.

Severity of acne was assessed based on James and Tisserand grading criteria. Various scales used include Dermatology Life Quality Index (DLQI) and Hospital Anxiety and Depression Scale .

Results- Out of the 184 acne patients, majority 57.1% belonged to the age group 20-24 . 65.8% were students. About 95(51.6%) had grade 11 acne. Quality of life was impaired in 85.9% of the patients. There is significant association between severity of acne and quality of life. 27.7% and 19.6 % were found to have anxiety and depression respectively. Similar association was found out with both anxiety and depression. Predictive analysis showed that impaired DLQI and severity at onset of Acne Vulgaris predicts a more severe course of Acne vulgaris, impaired DLQI can lead to anxiety which can further lead on to depression.

Conclusion- Our study shows that there is significant association between quality of life and severity of acne Vulgaris. Substantial proportions of subjects in the study were found to have signs of Anxiety and depression which had a correlation with severity of acne. This finding highlights the importance of routine mental health screen of patients with Acne Vulgaris.

Key-words: acne vulgaris, quality of life, anxiety depression.

Key Message: There is significant association between quality of life and severity of acne Vulgaris.. Substantial proportions of subjects were found to have signs of Anxiety and depression which had a correlation with severity of acne. This finding highlights the importance of routine mental health screen of patients with Acne Vulgaris.

INTRODUCTION

Throughout ages the skin conditions like acne have been contemplated as inconsequential when weighed against diseases of other organs. [1] The description of acne first appeared in the writings of the Byzantine physician Aetius Amidenus (who lived in the mid-fifth century to mid-sixth century) in ancient Greece. The word acne appears to have evolved from the Greek word acme, which means "point or spot." From historical records available, both Hippocrates (c. 460-370 B.C.) and Aristotle (c. 384-322 B.C.) were aware of this illness. Aristotle wrote about this condition in detail. The ancient Greeks described acne as tovoot, a word, which meant "the first growth of the beard"; it was associated with puberty. History suggests that the origin of the word 'acne' is as a misrepresentation of "acme." It was Fuchs in 1840 who divided acne into Acne Vulgaris, Acne Mentagra and Acne Rosacea. This being the first use of the term "Acne Vulgaris", a term which has persisted to the present day. [2]

Acne Vulgaris is a universal condition occurring among adolescents and remains problematic for a significant proportion of adults. [3] It is a chronic inflammatory disease of pilosebaceous units, characterized by seborrhea; open and closed comedones; papules; pustules; and in more severe cases nodules, pseudocysts, and scarring. [4]

A great deal of psychological burden is associated with acne. It is a common disease and usually affects the face which is the mirror to the outside world. Moreover, it is difficult to hide, and the scars can persist for years or for life. [5] Beyond a shadow of doubt, it is more predominant in adolescence, a juncture of life which builds up the inner self confidence and social abilities. Thus the scar produced by the disease will be more psychological than physical. A patient suffering from this distressing condition

undergoes a lot of difficulties in their day to day life. In particular, low self-esteem, low confidence, social dysfunction, poor personal relationships, lack of interest in sports and employment chances which can lead to anxiety, depression, obsessive compulsiveness and suicidal ideation. [6-8] Most of the studies are of the opinion that routine acne treatment plan should incorporate psychiatric evaluation and psychological support to address the negative impact of acne vulgaris on the psychological and emotional domains of the patients. [9,10] Several factors influence acne such as diet, menstruation, sweating, stress, ultra violet radiation and occupation. [11,12] It is important to study the effect of acne vulgaris on the quality of life among its sufferers. [13] While analysing new therapies for the management of acne vulgaris, the measurement of quality of life will come in handy. For developing and meticulously planning more targeted treatments for acne vulgaris quality of life, anxiety and depression should be assessed. [14]

In recent times, quality of life and psychiatric comorbidities among patients with acne vulgaris have been studied in various centres across the world. However, there are inadequate studies pertaining to this topic in India and only few studies have focused on the QOL and psychological problems in Acne Vulgaris patients. This study will be lightening up new ideas in this field. With this in mind, a study on the quality of life and the prevalence of depression and anxiety among patients with acne vulgaris was conducted in the Department of Dermatology, Mahatma Gandhi Medical College and Research Institute, Puducherry.

MATERIALS AND METHODS

This was a cross sectional study, which was conducted at the Mahatma Gandhi Medical College and Research Institute Hospital, a tertiary care hospital.

The Institutional Medical Ethics Committee approved this study. From January 2014 until April 2015 we enrolled all acne vulgaris patients of dermatology department between the age group 15-35 years. Written informed consent was obtained from the patients.

Inclusion Criteria

All clinically diagnosed cases of acne vulgaris both newly diagnosed and old follow up patients within the age group of 15-35 years belonging to both genders presenting to the department of dermatology at MGMC&RI, Pondicherry.

Exclusion Criteria

- Patients with pre-existing psychiatric disorder.
- Non compliant patients.

Brief explanation of the Procedure

A detailed history regarding socio-demographic profile symptoms and clinical aspects was taken after obtaining consent from all the participants of the study.

Severity of acne was assessed based on grading criteria. Dermatology Life Quality Index (DLQI) was used to evaluate the patient to determine the impact of Acne Vulgaris on health related quality of life. Hospital Anxiety and Depression Scale (HADS) was used to determine the association of psychiatric symptoms in Acne Vulgaris patients.

DLQI is a general questionnaire for evaluation of Quality Of Life in dermatology patients and consists of ten questions on disease symptoms, feelings, daily activities, type of clothing, social or physical activities, exercise, job or education, interpersonal relationships, marriage relationships and treatment. Its domain is from zero (without any effect on Quality Of Life) to 30 (extremely large effect on Quality of Life). According to the score obtained, the effect of disease on quality of life can be divided in five classes, which are -- without effect, small effect, moderate effect, very large effect, extremely large effect.

HADS is a questionnaire that helps in assessing anxiety and depression in patients with Acne Vulgaris. There are seven questions each for anxiety and depression. Each question is scored from 0-3 leading to a total score of 0-21. It is divided into normal (0-7), borderline abnormal (8-10), and abnormal (11-21). If a patient falls in abnormal category, he/she requires psychiatric counselling.

Study Parameters

A) Demographic data:

1. Age
2. Sex

B) Dermatology Life Quality Index (DLQI) Questionnaire

C) Hospital Anxiety Depression Score (HADS) Questionnaire.

Data Collection

All data was entered into a Data Collection Proforma Sheet and were entered into Excel (MS Excel 2011).

Statistical Methods

Statistical analysis was carried out using SPSS version 19.0 (IBM SPSS, US) software with Regression Modules installed. Percentage, Proportions, Chi square test, and multivariate analysis using regression analysis were used. Percentage and ratio was used to present the data pertaining to the distribution of the socio demographic variables and also the prevalence of depression, anxiety, severity of acne vulgaris and quality of life among patients with acne vulgaris. The association between socio demographic variables (age, gender etc) and severity of acne vulgaris and psychiatric comorbidity (depression, anxiety), and quality of life was studied using various statistical tests.

The variables which showed significant association with each other in these tests were taken up for regression analysis to determine the predictive relationships. Correlation analysis was utilised in order to study linear relationships between the various numerical variables - (a) depression (b)

anxiety (c) severity and duration of acne vulgaris (e) quality of life. Statistical significance was set at p value less than 0.05. All data analysis was performed using Microsoft Excel software & Statistical Package for Social Sciences (SPSS v 16.0).

RESULTS

One hundred and eighty four patients diagnosed with Acne Vulgaris were enrolled in the study after applying specified inclusion and exclusion criteria.

SOCIODEMOGRAPHIC PROFILE OF THE PATIENTS

The distribution of patients on the basis of age is presented in Table 1. 105 (57.1%) patients were in the age group of 20-24. 37 (20%) patients were in the age group of 15-19, 36 (19.6%) patients were in the age group of 25-30 and 6 (3.3%) were between 31-35. (figure1)

As depicted in the Table 2, figure 2, males constituted 52.7% and females were 47.3%.

Table 3, figure 3 shows that of the 184 patients who were screened, 121 (65.8%) are students, 7 (3.8%) are engineers, 7 (3.8%) are doing business and 5 (2.7%) are skilled workers.

Table 1: Distribution of age in patients with Acne Vulgaris

Age	No. Of Patients (%)
15-19	37 (20.1%)
20-24	105 (57.1%)
25-30	36(19.6%)
31-35	6(3.3%)
Total	184(100.0)

Table 2: Distribution of gender in patients with Acne Vulgaris

Sex	No of patients (%)
Male	97(52.7%)
Female	87(47.3%)
Total	184(100.0%)

Table 3: Distribution of occupation in patients with Acne Vulgaris

Occupation	No of Patients (%)
Student	121(65.8%)
Engineer	7(3.8%)
Business	7(3.8%)
Skilled	5(2.7%)
Others	44(23.9%)
Total	184(100%)



Patient with multiple comedones on the nose (Grade I acne vulgaris)



Patient with few papules, comedones on the face (Grade II acne vulgaris)

CLINICAL VARIABLES

Table 4, out of the 184 patients, 145 (78.8%) had mild acne at the onset of the disease while 23 (12.5%) had moderate acne at the onset of the disease and 16 (8.7%) had severe acne at the onset of the disease.

Table 5 shows the details of duration of Acne Vulgaris. 118 (64.1%) patients presented with acne of duration 1-5 years, 36 (19.6%) less than one year, 28 (15.2%) between 6-10 years, and 2 (1.1%) greater than 10 years.

Table 6 shows the dietary pattern in patients with acne vulgaris, 112 (60.9%) follows mixed diet, 54 (29.3%) follows non-vegetarian diet, 18 (9.8%) follows vegetarian diet.

Table 7 depicts the smoking habit in patients screened for Acne Vulgaris. 20 (10.9%) patients were found to be smokers

while the remaining 164 (89.1%) were non- smokers.

Table 8 shows that 162 (88%) does not consume alcohol while 22 (12%) consumes alcohol.

Table 9 shows the usage of tobacco among Acne Vulgaris patients, 4 (2.1%) were using tobacco while the rest of 180 (97.8%) patients do not use the same.

Table 10 shows the number of patients with positive family history of Acne Vulgaris. 69 (37.5%) have a positive family history of Acne Vulgaris while 115 (62.5%) have no family history.

Table 11 indicates the severity of Acne in patients with Acne Vulgaris by the use of grading system. 48 (26.1%) had grade 1 acne, 95 (51.6%) had grade 2 acne, 29 (15.8%) had grade 3 acne and 12 (6.5%) had grade 4 acne.



Patient with multiple papules pustules and few cyst on the face (Grade III acne vulgaris)



Patient with multiple papules pustules and cyst all over the face (Grade IV acne vulgaris)

Table 4: Distribution of patients according to severity at onset of lesions

Severity at Onset	No of patients (%)
Mild	145(78.8%)
Moderate	23(12.5%)
Severe	16(8.7%)
Total	184(100.0%)

Table 5: Distribution of duration of Acne Vulgaris

Duration (yrs)	No. Of Patients (%)
<1	36(19.6%)
1-5	118(64.1%)
6-10	28(15.2%)
>10	2(1.1%)
Total	184(100.0%)

Table 6 : Distribution of dietary habits in patients with Acne Vulgaris

Diet	No. Of Patients (%)
Vegetarian	18(9.8%)
Non vegetarian	54 (29.3%)
Mixed	112(60.9%)
Total	184(100.0%)

Table 7: Distribution of smoking in patients with Acne Vulgaris

Smoking	No. Of Patients (%)
Yes	20(10.9%)
No	164(89.1%)
Total	184(100.0%)

Table 8: Distribution of alcohol consumption in patients with Acne Vulgaris

Alcohol	No. Of Patients (%)
Yes	22(12.0%)
No	162(88%)
Total	184(100.0%)

Table 9: Distribution of tobacco consumption in Acne Vulgaris patients

Tobacco	No of Patients (%)
Yes	4(2.2%)
No	180(97.8%)
Total	184(100.0%)

Table 10: Distribution of Acne Vulgaris patients with positive family history of Acne Vulgaris

Acne History	No of Patients (%)
Yes	69 (37.5%)
No	115(62.5%)
Total	184(100.0%)

Table 11: Distribution of patients according to Acne grading

Acne grade	No of Patients (%)
1	48(26.1%)
2	95(51.6%)
3	29(15.8%)
4	12(6.5%)
Total	184(100.0%)

QUALITY OF LIFE

Table 12 shows the result of dermatological life quality index. 26 (14.1%) had no effect on quality of life, 38 (20.7%) had small effect on quality of life, 79 (42.9%) had moderate effect, 37 (20.1%) had very large effect and 4 (2.2%)

had extremely large effect on the quality of life.

Table 12: Distribution of quality of life based on DLQI

DLQI Index	(%)No of patients
No effect	26 (14.1%)
Small effect	38(20.7%)
Moderate effect	79(42.9%)
Very large effect	37(20.1%)
Extremely large effect	4(2.2%)
Total	184(100.0%)

ANXIETY AND DEPRESSION

Table 13 shows anxiety score using HADS in patients with Acne Vulgaris. 133 (72.3%) were found to be normal while 33 (17.9%) were borderline abnormal and 18 (9.8%) were found to be abnormal.

Table 14 shows depression score using HADS in patients with Acne Vulgaris. 148 (80.4%) were found to be normal, 30 (16.3%) borderline abnormal and 6 (3.3%) were found to be abnormal.

Table 13: Anxiety Score using HADS in patients with Acne Vulgaris

Anxiety Score	No of Patients (%)
Normal	133 (72.3%)
Borderline abnormal	33(17.9%)
Abnormal	18(9.8%)
Total	184(100.0%)

Table 14: Depression Score using HADS in patients with Acne Vulgaris

HADS Depression	No of Patients (%)
Normal	148(80.4%)
Borderline abnormal	30(16.3%)
Abnormal	6(3.3%)
Total	184(100.0%)

Table 15 shows the correlation between acne grading and the gender of the patients using Chi Square test, which shows no significance.

Table 16 shows that there is no significant correlation between severity of

acne and dietary habits p value=0.121, fisher exact calculated value=10.09

Table 15: Correlation of Acne grading and gender in Acne Vulgaris patients

Acne grade	Sex		Total
	Male	Female	
1	22	26	48
2	51	44	95
3	15	14	29
4	8	4	12
Total	96	88	184

p value=0.599, chi square calculated value=1.87

Table 16: Correlation between severity of acne and dietary habits in patients with Acne Vulgaris.

Acne grade	diet			Total
	1	2	3	
1	7	11	30	48
2	10	26	59	95
3	1	14	14	29
4	0	3	9	12
Total	18	54	112	184

p value=0.121, fisher exact calculated value=10.09

CORRELATION BETWEEN SEVERITY OF ACNE AND QUALITY OF LIFE

Table 17 shows the correlation between the severity of acne and quality of life (DLQI). There is significant association between severity of acne and the quality of life. p value=0.0001, fisher exact calculated value=45.92.

CORRELATION BETWEEN SEVERITY OF ACNE AND ANXIETY

Table 18 shows the correlation between severity of acne (based on grading) and anxiety (HADS). There is significant association between acne severity and anxiety. p value=0.007, fisher exact calculated value=17.61

Table 17: Correlation between the severity of acne (grading) and quality of life (DLQI)

Acne grade	DLQI index					Total
	0-1 No Effect	2-5 Small Effect	6-10 Moderate Effect	11-20 Very Large Effect	21-30 Extremely Large Effect	
1	14	8	21	5	0	48
2	12	26	40	14	3	95
3	0	3	16	10	0	29
4	0	1	2	8	1	12
Total	26	38	79	37	4	184

p value=0.0001, fisher exact calculated value=45.92

CORRELATION BETWEEN SEVERITY OF ACNE AND DEPRESSION

Table 19 shows the correlation between acne severity (based on grading) and depression (HADS). There is significant association between acne severity and depression. p value=0.049, fisher exact calculated value=12.66.

Table 18: Correlation between severity of acne (grading) and anxiety (HADS)

Acne grade and anxiety				
Acne grade	Anxiety (HADS)			Total
	0-7 Normal	8-10 Borderline Abnormal	11-21 Abnormal	
1	42	5	1	48
2	66	16	13	95
3	19	6	4	29
4	6	6	0	12
Total	133	33	18	184

p value=0.007, fisher exact calculated value=17.61

Table 19: Correlation between severity of acne (grading) and depression (HADS)

Acne severity and depression				
Acne grade	Depression(HADS)			Total
	0-7 Normal	8-10 Borderline Abnormal	11-21 Abnormal	
1	42	6	0	48
2	76	13	6	95
3	20	9	0	29
4	10	2	0	12
Total	148	30	6	184

ANALYSIS OF PREDICTIVE RELATIONSHIP BETWEEN ACNE SEVERITY AND OTHER CLINICAL VARIABLES AND PSYCHIATRIC PARAMETERS

Regression analysis (Table 20) was employed to test the predictor status of the severity of acne on the outcome variables (occupation, severity at onset, duration, dermatological life quality index, HADS-depression, HADS- anxiety). Since the variables are numerical, linear regression was employed. Only the significant variables with acne grade are selected for the regression analysis. The beta coefficients presented in the Table provide information on the strength and direction of relationships between the dependent variable (severity of acne) and the independent variable (depression / anxiety / DLQI, occupation, severity at onset,

duration). The standardized beta coefficient for DLQI (.055), and severity at onset (.263) were found to be statistically significant. Thus, Dermatological Life Quality Index and severity at onset showed a significant contribution to predict the severity of acne vulgaris.

ANALYSIS OF PREDICTIVE RELATIONSHIP BETWEEN DEPRESSION AND OTHER CLINICAL VARIABLES.

Regression analysis (Table 21) was employed to test the predictor status of depression score (HADS) on the independent variables (severity at onset, duration smoking alcohol use, tobacco use acne severity (grade), Dermatological Life Quality Index, HADS- anxiety). The standardized beta coefficient for anxiety – HADS (.598) was found to be statistically significant.

The presence of anxiety in patients with acne vulgaris can lead on to depression.

ANALYSIS OF PREDICTIVE RELATIONSHIP BETWEEN ANXIETY AND OTHER CLINICAL VARIABLES

Regression analysis (Table 22) was employed to test the predictor status of anxiety score (HADS) on the independent variables (severity at onset, duration, smoking, alcohol, tobacco use, acne grade, DLQI index, and HADS depression). The standardized beta coefficient for DLQI index (.146) and HADS –Depression were found to be statistically significant. Thus DLQI and HADS- depression showed a significant prediction to develop anxiety.

ANALYSIS OF PREDICTIVE RELATIONSHIP BETWEEN DERMATOLOGY LIFE QUALITY INDEX AND OTHER CLINICAL VARIABLES

Regression analysis (Table 23) was employed to test the predictor status of Dermatological Life Quality Index (dependent variable) with other

independent variables (severity at onset, duration of disease, smoking, tobacco use, alcohol, acne grading). The standardized beta coefficient for tobacco use (8.600), acne grading (2.184), HADS- anxiety (.495), HADS - depression (.157) was found to be statistically significant. Thus tobacco use, acne severity (grading), anxiety and depression shows a significant prediction to develop higher DLQI scores.

Table 20: Regression analysis between severity of acne (grading) and other significant independent variables

Model Independent variables	Beta	Std. Error	Sig.
occupation	.045	.026	.085
Severity at onset	.263	.088	.003
duration	.187	.088	.034
DLQI index	.055	.011	.0001
HADS - anxiety	.039	.023	.088
HADS - depression	-.036	.027	.187

Table 21: Regression analysis between depression (HADS) and other significant independent variables

Model Independent variables	β	Std. Error	Sig.
Severity at onset	-.132	.257	.609
Duration of acne	-.098	.255	.700
Smoking	.368	.802	.647
Alcohol	.253	.765	.742
Tobacco use	-.383	1.212	.752
Acne grade	-.193	.211	.362
DLQI index	.033	.035	.344
HADS-anxiety	.598	.045	.000

Table 22: Regression analysis between anxiety (HADS) and other significant independent variables

Model Independent variables	β	Std. Error	Sig.
Severity at onset	.364	.305	.234
duration	-.334	.302	.271
smoking	-.762	.952	.425
alcohol	-.171	.911	.851
tobacco	2.499	1.430	.082
Acne grade	.324	.251	.199
DLQI index	.146	.040	.000
HADS-depression	.847	.063	.000

Table 23: Regression analysis between DLQI and other significant independent variables

Model Independent variables	β	Std. Error	Sig.
Severity at onset	-1.049	.558	.062
duration	-.351	.558	.530
smoking	.862	1.756	.624
alcohol	1.718	1.673	.306
tobacco	-8.600	2.576	.001
Acne grade	2.184	.433	.000
HADS-anxiety	.495	.134	.000
HADS-depression	.157	.166	.344

DISCUSSION

Through this study an attempt was made to analyse the quality of life, prevalence of anxiety and depression among patients with acne vulgaris in a

tertiary care centre for a period of one and half years. It also studies the influence of socio-demographic and clinical variables on prevalence of these comorbidities among patients with acne vulgaris.

Quality of life in acne vulgaris patients

Out of the 184 patients, 79 (42.9%) had moderate effect on quality of life the rest 26 (14.1%) had no effect on quality of life, 38 (20.7%) had small effect on quality of life, 37 (20.1%) had very large effect and 4 (2.2%) had extremely large effect on the quality of life. Similar results were observed by Samanthula et al. [15] Safizadeg in 2012 found that based on DLQI score classification, the impact of acne on quality of life was very much, and moderate in 114 patients (51.8%) and little or nothing in 106 (48.2%) patients. [16]

This study shows that there is significant association between severity of acne and the quality of life. Durai et al from a study conducted in south India showed that there was statistically significant association between grade of acne and DLQI score. [5] Krejci-Manwaring et al also came to the conclusion that severe acne can result in poor quality of life. [17] While studies of Yazici et al found no correlation between acne severity and quality of life.

Anxiety and depression among acne vulgaris patients

While assessing anxiety by HADS, 133 (72.3%) were found to be normal while 33 (17.9%) were borderline abnormal and 18 (9.8%) were found to be abnormal. Assessment of depression using the same showed that 148 (80.4%) were normal, 30 (16.3%) borderline abnormal and 6 (3.3%) were found to be abnormal. In our patients about 27.7% had anxiety while 19.6% had depression. Similar results were obtained by Yazici et al who showed that the rates of subjects at risk for anxiety (26.2%) and for depression (29.5%) were significantly higher in the patient group than in the control group (0% and 7.9%) respectively. [18] Alhuzali et

al demonstrated that depression, regardless of its severity, was reported among 40.8% of acne patients. [19] Severe depression was reported by 12.3% of acne patients while mild and moderate depression was reported by 16.2% and 12.3% respectively.

The correlation between acne severity and anxiety and depression were found to be significant in our study. Wu et al showed that there is significant association between severity of acne and anxiety and depression. [20] However, in some studies, there is no relationship between acne and anxiety or the severity of anxiety and depression was not related to the acne severity clinically. [8,18,21]

Also it is important to note that heterogeneity in the screening tools utilized across various studies and sociocultural factors influencing mental health could explain these variations in prevalence, to an extent.

Age and Gender

Major proportion of the study sample comprised patients in the age group of 20-24 and higher number of students. The students are more likely to seek treatment for acne vulgaris because of the embarrassment they have in front of their peers.

In our study number of males (52.7%) were more than females (47.3%) which is similar to a study done by Samanthulla. [15] According to Aktan et al acne prevalence in girls and boys was 16.1% and 29.2% respectively. [22] In a study done by Durai et al majority of the patients were female with a female to male ratio of 1.55:1, which differed from our study. [5]

Severity of acne vulgaris

In our study majority had grade 2 acne (51.6 %) followed by 26.1% grade 1 acne, 15.8% grade 3 acne and 6.5% grade 4 acne. Durai et al study showed a majority of grade 1 acne (47%), grade 2 acne (38%), grade 3 acne (14%) and grade 4 acne (1%). This study had a larger

proportion of people with grade 4 acne as compared to the study by Durai et al. [5]

Smoking and alcohol

Relationship between smoking, alcohol and acne is unclear. Out of the 184 patients 20 (10.9%) patients were found to be smokers and 22 (12%) consumes alcohol. According to a study by Firooz et al only 4.1% were smokers and there is no relation between acne and smoking. [11]

Family history of acne vulgaris

Among the 184 patients 37.5% reported that they have a parent or sibling with acne vulgaris. 62.5% had no family history of the disease. Another study conducted in Malaysia showed that 81.8% had a close relative, such as parents or siblings with acne vulgaris. [23]

Predictive analysis

Regression analysis was employed to test the predictor status of variables. Dermatological life quality index and severity at onset showed a significant contribution to predict the severity of acne vulgaris. That is, if the score of dermatological life quality index is high or the severity at onset is severe, then severity of acne vulgaris is high. Analysis also showed that the presence of anxiety in patients with acne vulgaris can lead on to depression. Also patients with high DLQI and HADS- depression showed a significant prediction to develop anxiety. Tobacco use, acne severity (grading), anxiety and depression show a significant prediction to develop higher DLQI scores. Studies pertaining to predictive analysis could not be located in our literature review.

Limitations

This study was conducted on a small sample and thus may not be completely representative of the general population. This also restricts the generalizability of our results.

Suggestion for further research

- Further studies are needed with large sample size.

- More prospective follow up studies are required.
- It is recommended that future studies in acne vulgaris can also include a detailed probe in to the mental health problems other than anxiety and depression, such as alcohol dependence, smoking and psychosis.

CONCLUSION

Our study shows that there is significant association between quality of life and acne severity. This will have a huge impact on the patient's mental and social wellbeing. Predictive analysis studies shows that impaired dermatology life quality index and increased severity of the disease at onset can predict the severity in the course of acne vulgaris.

Anxiety and depression were found in our study which has a correlation with severity of acne. Predictive analysis showed that presence of anxiety in patients can lead on to depression. So using hospital anxiety depression scale (HADS) in patients with acne vulgaris can find the patients with anxiety and depression.

Thus including the dermatology life quality index (DLQI) and hospital anxiety depression (HADS) questionnaires in the management of patients with acne vulgaris can predict the severity of acne vulgaris and find out psychological comorbidities like anxiety and depression at the earliest. Moreover, finding out who all are at increased risk of being negatively affected by the disease can help the clinician to treat them at the earliest in an integrated manner.

This would ultimately help in improving treatment adherence and overall health outcomes and quality of life in acne vulgaris patient.

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