International Journal of Research in Dermatology
Ghorpade GS et al. Int J Res Dermatol. 2020 Nov;6(6):769-775
http://www.ijord.com

DOI: https://dx.doi.org/10.18203/issn.2455-4529.IntJResDermatol20204565

Original Research Article

Cross-sectional study of perceived stress, self-esteem, body image disturbance and suicidal ideation in patients of acne vulgaris

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Received: 24 August 2020
Revised: 29 September 2020
Accepted: 16 October 2020

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ABSTRACT

Background: Acne vulgaris is characterized by chronic inflammation of the pilosebaceous units. It has been strongly associated with social impairment among adolescents. The study aims to assess the level of perceived stress, self-esteem, body image disturbance and suicidal ideation in patients of acne vulgaris; uncover any underlying association or correlation between these and the severity of acne vulgaris and further examine the association and co-relation of body image disturbance with perceived stress and self-esteem.
Methods: Cross-sectional observational study of 72 patients with acne vulgaris was undertaken by purposive sampling technique. After taking informed consent, subjects were assessed on perceived stress scale-10, Rosenberg's self-esteem scale, appearance anxiety inventory and Columbia-suicide severity rating scale. Spearman's correlation coefficient helped to examine the correlations.
Results: 31.94% patients had severe acne, 72.22% of patients had high body image disturbance. More than half the patients of acne had high level of perceived stress. Almost three quarters of the patients had low self-esteem. 5.55% patients had suicidal ideation. No significant association was seen between severity of acne with perceived stress, self-esteem, body image disturbance and suicidal ideation. Body image disturbance was significantly associated with perceived stress and self-esteem. A positive correlation between body image disturbance and perceived stress and a negative correlation between body image disturbance and self-esteem was obtained.
Conclusions: All patients, irrespective of the objective severity of acne, can experience high perceived stress and low self-esteem along with body image disturbances. This warrants consultant liaison between dermatologists and psychiatrists in routine practice for psychosocial intervention.

Keywords: Acne vulgaris, Perceived stress, Self-esteem, Body image disturbance, Suicidal ideation

INTRODUCTION

Acne vulgaris is a common dermal disease characterized by chronic inflammation of the pilosebaceous units.[1] Clinically, it is characterized by seborrhea, comedones, papules, nodules, pustules and scarring.[2] Acne vulgaris affects at least 85% of adolescents and young adults.[3] Individuals with acne have disturbances in interpersonal relationships, daily life, and academic performance.[1,4]

The relationship between severity of acne and emotional distress is poorly understood and rather controversial. More severe acne has been suggested to be associated with increased anxiety, depression symptoms and impact on patients' life.[5]

Body image disturbance has been defined as "a persistent report of dissatisfaction, concern, and distress that is related to an aspect of appearance and some degree of

impairment in social relations, social activities, or occupational functioning."[6] The appearance of the skin is important in social interaction and for self-image.[7] Patients may engage in behaviors like skin picking, mirror checking and camouflaging.[8]

Suicidal ideation is an unpleasant symptom and indicator of emotional distress. They include any self-reported thoughts of engaging in suicide-related behavior or associated with suicidal plans and attempts.[9,10] Adolescents with severe forms of acne were found to be more likely to develop mental problems and were at risk of attempted suicide.[11]

Psychological stress has also been identified amongst factors that exacerbate acne.[12-14] Several studies have shown that psychological stress can alter the immune functions of the skin and cutaneous barrier function.[15,16] Thus, not only does acne result in emotional distress, the anxiety evoked by having acne can aggravate the skin condition itself, thereby creating a vicious cycle.[17]

While previous studies have individually found that self-esteem, body image disturbance and perceived stress are significantly associated with severity of acne in patients, the effect caused by the complex interplay of these factors and suicidal ideation in patients with acne has never been studied before.[18-20] This lacuna makes it relevant to study the relations between acne, social functioning, and suicidal ideation. The purpose of the study is to assess the level of perceived stress, self-esteem, body image disturbance and suicidal intent in patients of acne vulgaris and uncover any underlying association or correlation between these and the severity of acne vulgaris. The study further examined the association and co-relation of body image disturbance with perceived stress and self-esteem.

METHODS

Ethical clearance from the institutional ethics committee was sought for and obtained before beginning the study. Written informed consent was taken from all participants for consent to participate in the study and for publication of the results obtained after completion of the study. The consent was obtained in the language they best understood. (English, Hindi or Marathi) The study was conducted over two months by department of psychiatry in the acne OPD of a tertiary care hospital.

Inclusion criteria included patients above 18 years of age, clinically diagnosed as having acne vulgaris, visiting acne OPD of dermatology department were recruited in study.

Exclusion criteria excluded patients with co morbid skin conditions like psoriasis, lichen planus; patients with acne with known history of mental illnesses and disabilities that can affect their mental state; patients with acne with chronic medical or surgical conditions; patients unable to communicate with the investigator or unable to complete questionnaires due to some language problem or severe learning disabilities and those refusing to give consent were excluded from the study.

There is a paucity of literature in this field with no studies done indicating the prevalence of body image disturbance in patients of acne vulgaris. By applying universal sampling formula at 90% confidence intervals with 5% margin of error and 50% standard of deviation, 72 patients were taken by purposive sampling technique. Diagnosis and grading of the acne was done by dermatologist before the interview. All participants were explained about the nature of the study and its application. After obtaining consent, socio-demographic data was collected using a semi-structured proforma which documented socio-demographic data of the patients like age, sex, education, occupation, income, history of smoking, duration of acne, site of acne, grade of acne, family history of acne and cosmetic make up use.

They were then administered.

Perceived stress cale-10 (PSS-10)

The perceived stress scale (PSS; Cohen, Kamarch and Mermelstein 1983) is a popular tool for measuring psychological stress, a self-reported questionnaire that was designed to measure "the degree to which individuals appraise situations in their lives as stressful".[21] For this study perceived stress scale-10 (PSS-10) was used. Scores range from 0 to 40, with scores higher than 20 indicatives of high perceived stress. [22] The Cronbach's alpha reliability coefficient for the PSS-10 was 0.89.

Rosenberg self-esteem scale (RSES)

The Rosenberg self-esteem scale (RSES) (Rosenberg 1965) is one of the most widely used self-report methods for assessing global self-esteem. The RSES has typically been scored on a metric ranging from 10 (Poor) to 40 (Excellent) with scores higher than 20 indicatives of high self-esteem.[22] Cronbach's alpha for the RSES was 0.91.[23]

Appearance anxiety inventory (AAI)

The AAI is a self-report measure that focuses on the cognitive processes and safety seeking behaviors that are characteristic of a response to a distorted body image and associated shame. The scale is comprised of ten items, each scored on a five-point Likert scale ranging from zero for "not at all" to four for "all the time". The maximum score is 40, higher scores reflecting greater frequency of a process. AAI had good internal consistency with Cronbach's alpha score of 0.86.[24]

Columbia-suicide severity rating scale (C-SSRS)

The C-SSRS is a semi-structured interview with 2 subscales that measures suicidal ideation and behavior. Suicidal ideation is measured in terms of severity and

intensity. The severity scale is a six-point ordinal scale, ranging from 1 (wish to be dead) to 5 (suicidal intent with plan). Adolescents who denied ideation received a zero. The intensity scale is comprised of five items namely frequency, duration, controllability, deterrents and reasons for ideation, each rated on an ordinal scale. These five items are completed only in adolescents who endorse at least one of the severity items. Those without any suicidal ideation are given a scale score of zero on intensity.

The behavior scale is a five-point nominal scale that investigates interrupted, aborted suicide attempts, actual suicide attempts, preparatory behavior for a suicide attempt and non-suicidal self-injurious behavior. Cronbach's alpha for the C-SSRS intensity scale was 0.94 and 0.95 for "since last visit" and "past week" assessment intervals, respectively.[25]

All scales are available in the public domain and have been translated and validated. The collected data was tabulated. The obtained scores were then associated using contingency tables to assess for any significant results using chi-square test. Spearman's coefficient was also applied to correlate levels of perceived stress, self-esteem, body image disturbance and intensity of suicidal ideation with the severity of acne vulgaris. Further correlation of body image disturbance with perceived stress and self-esteem was also done. The entire statistical analysis was carried out using GraphPad prism software (San Diego, CA).

RESULTS

72 eligible patients meeting our inclusion criteria were interviewed in the acne OPD using the purposive sampling technique. They were recruited into the study after taking written informed consent. The response rate was 100%.

The mean age of the patients was 21.93 years. There were 47 males and 25 females among the 72 patients. 90.27% patients were unmarried while 77.78% patients were unemployed. 6.9% of the patients had completed their primary education, 25% each had completed up to secondary and higher secondary (12th standard) education, 40.27% were graduates while 2 patients were post-graduates.

15.28% patients had grade 1 acne, 52.78% had grade 2 acne, 18.06% had grade 3 acne and 13.88% had grade 4 acne. 83.33% patients had acne on the face, 11.11% on the chest and shoulders and 5.56% on the back. 37.5% patients admitted to cosmetic use while 30.56% patients had a positive family history of acne.

54.17% of the patients of acne had high level of perceived stress. 72.22% of the patients had low self-esteem. 72.22% of patients also had high body image disturbance. 4 patients out of 72 had suicidal ideation (5.55%).

The average score (Table 1) on AAI was 27.13 (SD 8.10), RSES was 15.56 (SD 6.16) and PSS was 23.25 (SD 7.00). Among the 4 patients with suicidal ideation, the average score on CSSRS was 18 (SD 1.41).

Table 1: Mean values obtained from study sample.

Factor	Mean	Std. deviation
Age (Years)	19.27	1.45
Duration of acne	31.33	4.78
AAI	27.13	8.10
RSES	15.56	6.16
PSS	23.25	7.00

In the 23 patients having severe acne, 9 (39.13%) had high level of perceived stress, 17 (73.91%) had low self-esteem and 19 (82.61%) had high body image disturbance while in the 49 patients having mild acne, 30 (61.22%) had high level of perceived stress, 35 (71.43%) had low self-esteem and 33 (67.35%) had high body-image disturbance. In the 52 patients having high body-image disturbance, 34 (65.38%) had high level of perceived stress and 42 (80.77%) had low self-esteem.

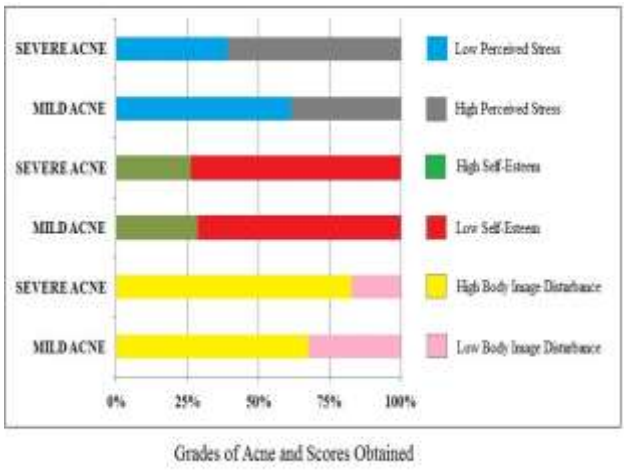

Figure 1: Stacked horizontal bar graph of effects of mild and severe acne on perceived stress, self-esteem and body image disturbance.

The chi-square test analysis for contingency tables drawn up for the grades of acne with the levels of perceived stress, self-esteem, body image disturbance and suicidal ideation did not yield any significant results (Figure 1). Statistically significant associations of body image disturbance with levels of perceived stress (p value=0.0021) (Table 2) and self-esteem (p value=0.0090) (Table 3) were obtained.

The correlation between grades of acne and the levels of self-esteem, body image disturbance and intensity of suicidal ideation was found to be statistically

insignificant. A negative correlation (r value=-0.2542) was obtained between the grade of acne and perceived stress (p value=0.0313). A positive correlation (r value=0.2898) between body image disturbance and perceived stress (p value=0.0142) (Figure 2) and a negative correlation (r value=-0.5598) between body image disturbance and self-esteem (Figure 3) was also obtained (p value<0.00001) (Table 4).

Table 2: Association of body image disturbance with perceived stress.

Body image disturbance	High perceived stress	Low perceived stress	Total
High AAI score	34	18	52
Low AAI score	5	15	20
Total	39	33	72
Chi-square value	Degree of freedom		p value
9.489	1		0.0021*

* P value <0.05 is indicative of statistical significance.

Table 3: Association of body image disturbance with self-esteem.

Body image disturbance	High self-esteem	Low self-esteem	Total
High AAI score	10	42	52
Low AAI score	10	10	20
Total	20	52	72
Chi-square value	Degree of freedom		P value
6.817	1		0.0090*

*P value <0.05 is indicative of statistical significance.

Table 4: Significant correlations obtained from the sample.

Factors Correlated	P value	R value	Goodness of fit (R squared)	Correlation
Grade of acne and perceived stress	0.0313*	-0.2542	0.0646	Weak
Body image disturbance and perceived stress	0.0142*	0.2898	0.0828	Weak
Body image disturbance and self-esteem	<0.00001*	-0.5598	0.3134	Moderate

*P value<0.05 is indicative of statistical significance of result.

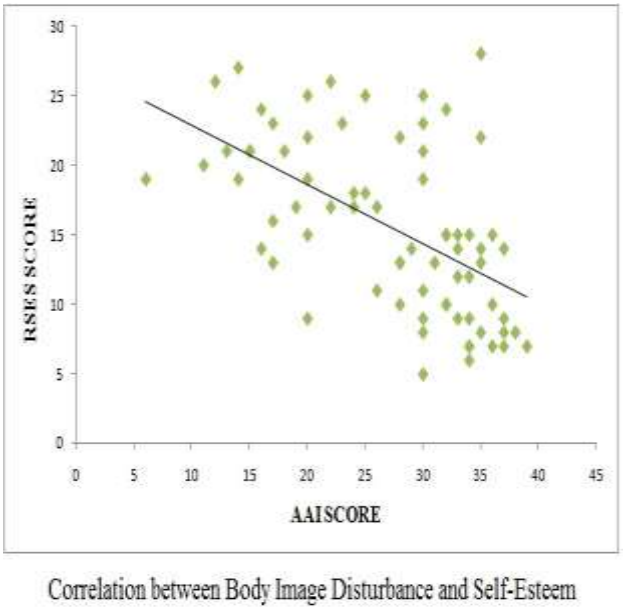

Figure 2: Graph of Spearman's correlation between body image disturbance and self-esteem.

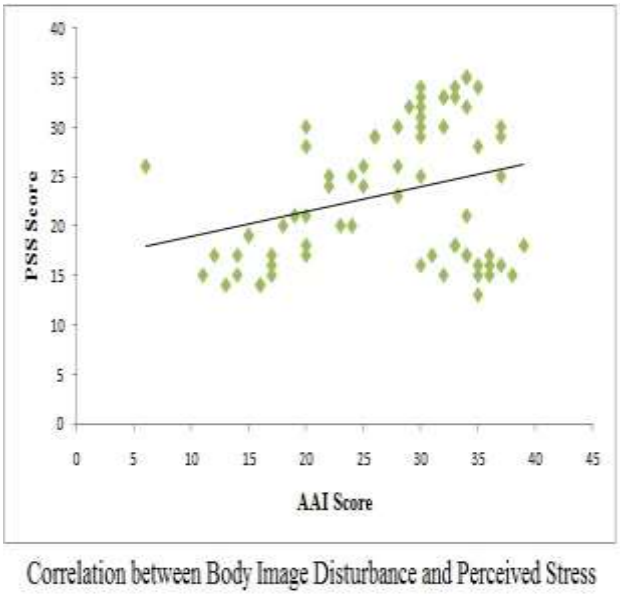

Figure 3: Graph of Spearman's correlation between body image disturbance and perceived stress.

DISCUSSION

A mean sample age of 21.93 years, indicating a predominantly young adult sample population, was similar to the study done by Golchai et al where the mean sample age was 21.22 years.[26] This is due to the fact that acne has a higher incidence among the younger population and is not frequently found among other ages. Majority (65.27%) of the study participants were males, similar to the findings of a western study by Vilar et al 68.06% patients had mild acne which was in keeping with findings of Golchai et al, Ribas et al, Costa et al and Tasoula et al having similar mild preponderance.[20,26-29]

More than half (54.17%) of the patients of acne had high level of perceived stress, echoed in the findings of studies done by Chiu et al and Zouboulis et al.[13.14] Skin determines the outer appearance of an individual and thus, any skin condition that affects the way they look is a pressing concern for people.[7] Stress can also exacerbate acne.[12,14] Studies have found that stress enhances secretion of adrenal androgens resulting in sebaceous hyperplasia which causes activation of hypothalamic-pituitary-adrenal (HPA) axis. The HPA axis is responsible for increased levels of cortisol release since corticotropin-releasing hormone (CRH) is the central coordinator for neuroendocrine responses to stress and is the most proximal element of the HPA axis. CRH also stimulates steroidogenesis and sebaceous gland lipid production leading to acne.[13,30]

72.22% of the patients had low self-esteem, mirroring the findings of Vilar et al.[27] Appearance of patients having chronic recurring skin conditions like acne lies outside their control and can impact their interpersonal relationships resulting in a low-self-esteem.[19]

Almost three in every four patients (72.22%) had high body image disturbance. Girls tend to wear heavy makeup to disguise the acne. Acne sufferers also grow their hair long to cover the face.[8] Patient's perception of acne severity and appearance of acne on face which cannot be covered by clothing emerged as important clinical variables associated with higher psychiatric morbidity.[7,31]

The chronic nature and frequent recurrences of acne coupled with its effects on the individuals' self- image results in the development of a vicious cycle, where acne causes low self-esteem and high perceived stress, which further exacerbates acne leading to a loss of hope of total recovery. Without appropriate help, it becomes difficult for the patient to escape from the all-encompassing clutches of such a downward spiral which may end up causing depression and suicidal ideation. 4 patients out of 72 had suicidal ideation (5.55%). This level matched those in studies done by Picardi and Gupta et al.[12,33,32]

The association between grades of acne and the levels of perceived stress, self-esteem, body image disturbance and suicidal ideation did not yield any significant results. Similar results were obtained in studies done to unearth associations between grades of acne and perceived stress by Bowe et al and self-esteem by Dunn et al.[31,34] Thus, no association is seen between grades of acne and perceived stress and self-esteem. This simply means that patients with even mild acne may experience significant psychological distress and poor self-esteem due to the visible nature of the disease and fear, anxiety and worries about the repercussions of the same on all aspects of their life. Thus, the mere presence of acne, irrespective of its objective severity, is sufficient to cause similar subjective psychiatric effects among its patients. In this aspect, it is important to note that without psychiatric intervention, even the patients of mild acne harboured the same kind of thoughts that would populate the mind of a patient of severe acne.

The association between body image disturbance and perceived stress was statistically significant. There was a weak positive correlation between body image disturbance and perceived stress implying that higher the level of body image disturbance, higher is the perceived stress in life (r value=0.2898).[35] The association between body image disturbance and self-esteem was also statistically significant. There was a moderate negative correlation between body image disturbance and self-esteem indicating that higher the level of body image disturbance, lesser is the self-esteem (r value=-0.5598). There is dearth of literature showing relation of body image disturbance with perceived stress and self-esteem in patients of acne vulgaris. Once the patient has developed belief systems and cognitive distortions leading to high body image disturbance, putting the patient at a higher risk for depression and body dysmorphic disorder, the grade of acne which is the inciting cause for this paradoxically becomes immaterial. Thus, irrespective of the actual grade of the disease, high perceived stress and low self-esteem were observed in patients having high body image disturbance.

A weak negative correlation (r value=-0.2542) was obtained between the grade of acne and perceived stress. Previous study by Bowe et al had reported no statistically significant association between the two.[31] As per the evergreen adage, an idle mind is a devil's workshop. In keeping with the findings of the current study, while even patients of mild acne experienced high perceived stress, an interesting point to note is that the level of perceived stress seemed to reduce with increasing grades of acne. Patients having higher grades of acne have often consulted specialists and are fully aware and accepting about the nature of the disease, it's prevention and the wide range of treatment options available to them presented akin to the cafeteria approach. The delayed realization that there are more catastrophic demons in their mind than acne on their skin and the comprehension that the fallout of acne is not as severe as they had expected contributes to lower perceived stress scores than

anticipated in patients of severe acne, especially when compared to the scores of their milder counterparts.

Our study has some limitations. The study enrolled patients only from a tertiary care centre in a metropolitan setting and was carried out over a timeframe of only two months and as such the results cannot be nationally generalized. Since the study was a cross-sectional study, no causal relationships could be established. There may have been a response and recall bias while answering the scales. Though the scales demonstrated sufficient validity and reliability, since they were self-reported, other confounding factors such as obesity and prejudices related to skin colour impressed upon fashionable minds by society and recent negative individual experiences may also contribute to the body image disturbance scores. Similarly, the patient's own personality governed by their upbringing, coloured by their unique past experiences and expectations from life may contribute to differences in perceived stress, suicidal ideation and self-esteem scores even in otherwise similar situations.

The study emphasizes the need for longitudinal prospective studies taking into account other variables and confounding factors like seasonal variation and hormonal changes on a larger scale at various other centers and in diverse cultural settings with multisectoral coordination. Having control groups will eliminate many confounding factors influencing the course of acne and its psychological impact and is a future recommendation.

CONCLUSION

In this study, majority patients had mild acne. More than half the patients of acne had high level of perceived stress. Almost three quarters of the patients had low self-esteem. High body image disturbance was also observed in a similar proportion of patients. 5.55% patients had suicidal ideation. No association was seen between severity of acne and perceived stress, self-esteem, body image disturbance and suicidal ideation which means that patients with even mild acne may experience significant psychological distress and body image concerns similar to those with severe acne. The association between body image disturbance with perceived stress and self-esteem was found to be statistically significant. There was a positive correlation between body image disturbance and perceived stress and a negative correlation between body image disturbance and self-esteem. It is clinically important for the dermatologist to gauge the psychosocial impact a patient's acne has on his or her life and to intervene in this area to prevent serious mental health complications. This ground breaking study sheds light on the fact that grading a patient's acne based on lesion counts and on acne severity scale is not clinically reliable to understand subjective distress and body image concerns. Instead, understanding patient's perception of distress related to acne should guide psychosocial intervention. It is also recommended that all patients with acne should be assessed for perceived stress, self-esteem and suicidal ideation early in the treatment course. There is a need to identify patients and provide appropriate treatment. Thus, the dermatologist requires to refer the patient to a psychiatrist for cognitive-behavioral therapy and appropriate pharmacotherapy. Consultant liaison between dermatologist and psychiatrist in routine practice for this condition is warranted to improve treatment outcome. Psychological support in the form of counselling, psychoeducation, supportive therapy and relaxation techniques will go a long way in helping the patient to cope with acne. A finetuned treatment regimen along with counselling protocol actively involving both departments would enable the patient to move out from these dark spots in life.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the institutional ethics committee

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Cite this article as: Ghorpade GS, Kadam KS, Angane AY, Unnithan VB. Cross-sectional study of perceived stress, self-esteem, body image disturbance and suicidal ideation in patients of acne vulgaris. Int J Res Dermatol 2020;6:769-75.