Original Article

Acne Vulgaris Amongst Students: Mapping Severity Prevalence, Practices, and Psychological Implications: A Multi-institutional Cross-Sectional Study

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Abstract

Background: Acne vulgaris (AV) not only affects the skin but also precipitates emotional and psychological effects on the self-esteem of individuals.

Objective: To assess the effect of AV on the self-esteem of adolescents, and map treatment practices and severity of AV.

Methods: We conducted an observational cross-sectional study at different educational institutes in Karachi, Pakistan. Data was collected from individuals who had visible acne and were aged 14-25 years. Severity was evaluated using the Leeds classification for AV. Self-esteem was assessed using Rosenberg's self-esteem scale. We used the Chi-square test to look for significant associations between variables.

Results: We received 374 responses from individuals with AV, out of which 313 (83.7%) individuals had normal self-esteem while only 61 (16.3%) had low self-esteem. Self-esteem was low amongst females when compared to males (18.1% vs. 10.9%, p=0.104), in the age group 20-25 versus the age group 14-19 (17.2% vs. 14.9%, p=0.564), and in individuals with degree 2-3 severity when compared to degree 1 severity (25.4% vs. 14.6%, p=0.171). However, none of these associations were significant. More than half of AV cases were not clinically diagnosed (57.8%). Up to 44.1% of students used home-based remedies, and only 19% used prescribed medications for AV.

Conclusion: Unlike prior literature, AV did not have a significantly negative impact on the self-esteem of individuals in our study.

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Introduction

Skin diseases are one of the major causes of disablement and dysfunction that are experienced all over the world with acne vulgaris (AV) ranking as the second most common skin

disorder after dermatitis in global disease-adjusted life years.[1] Acne lesions are characterized by the thickening of keratin lining, resulting in obstruction of sebaceous glands forming closed (whiteheads) and open (blackheads) comedones, inflammation around sebaceous glands, increased sebum production, and an increase in Propionibacterium acnes within ducts.[2]

Physical appearance plays an important role in an individual's social experience. Visible skin lesions affect individuals not only physically, but also psychologically because of the stigma they create in our society.[3] AV seems to be a superficial process but it can severely impact a patient's mental and emotional health. This psychosocial morbidity is not proportional to the severity of the disease; rather, it depends on the quality of life that is affected.[4] Self-esteem is one of the major factors that directly or indirectly affect the quality of life and is defined as how one interprets their self-worth in their own eyes. It is a measure of positive and negative assessments that we make about ourselves. The stability of self-esteem has an important role in psychological functions and is essential for a healthy life.[5]

Teenage years or adolescence is a time of physical, emotional, and social development. AV is a relatively common skin condition that affects around 85% of people between the ages of 10 to 19 years.[6] According to a study conducted in Chandigarh (India), the prevalence of acne is slightly higher in boys (72.3%) than girls (71.1%).[7] Several studies have been conducted to report the prevalence of AV but not much information is available regarding it in our part of the world to determine its relationship with psychosocial interactions.[8] In 2019, a study was conducted in Rawalpindi and Islamabad, Pakistan, to assess the psychosocial stressors in patients with AV[8]. According to that study, 66% of patients showed embarrasment and 60% claimed their social life was affected due to acne.[8] A cross-sectional study was conducted in India, which reported that the presence of AV is associated with psychosocial impairment as assessed by the Cardiff Acne Disability Index.[9] According to a study in Malaysia, students reported a poor quality of life, as measured by the Dermatology Life Quality Index, especially in females who reported a significantly higher impact on personal, work, and school life.[10]

We reviewed articles that inspected the impact of AV on patients' self-esteem, the studies showed that acne negatively affects self-esteem among patients of all age groups which is further associated with anxiety and depression.[11] In a similar study, it was discovered that young girls and boys with acne had feelings of remarkably lower self-demeanor, fewer feelings of pride, and low body satisfaction than those without acne.[12] However, there has not been generous qualitative research exploring the effect of acne on self-esteem in Pakistan.

In consideration of the paucity of existing literature, we conducted this study to evaluate the effect of AV on the self-esteem of students in Karachi, Pakistan. The objectives of our study were the following: to discover the impact of AV on the self-esteem of adolescents and young adults in Pakistan, to map the severity of AV in the adolescent population in Pakistan, and to map the practices of treatment amongst individuals in Pakistan.

Methods

This was an observational cross-sectional study, conducted at the Karachi Medical and Dental College, Dow Medical College, Jinnah university for women, Jinnah Sindh Medical College, and the Indus University in Karachi, Pakistan, between February and July 2023. Ethical approval was obtained from the ethical board at the Karachi Medical and Dental College before the study (Reference Number, 036/2022). This observational study was conducted in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist.

We considered all 4 grades of acne as proposed by Leeds classification of acne, revised by Cunliffe 2003 as shown in Table 1.[13]

In accordance with the interpretation of Rosenberg Self-Esteem scale: Students having scores of 15 or below on Rosenberg Self-Esteem scale were considered as having low self-esteem.[14] Students having scores above 15 were considered as having normal self-esteem. It was developed by Rosenberg in 1965 and revised by Hutz in 2011. This scale contains 10 statements which are rated by 4 points from strongly agree to strongly disagree. Higher scores are considered as higher self-esteem and vice versa.

The sample size was calculated using the Openepi calculator with confidence level of 95%, confidence limit as 5%, and a margin of error of 0.05 It came out to be 323; however, 374 responses were received.[15] Out of these 374, 162 were received as online questionnaires designed and distributed via Google Forms while 212 were received in print. The sample was selected using non-probability convenience sampling.

Only those students were included in the study that had visible AV according to our functional definition of acne. They were asked to fill the questionnaire only if they had visible acne and were categorized using the Leeds classification AV.[13] Students who did not give consent or the ones suffering from any other skin disease were excluded from the study.

Data was collected by both online questionnaires and hardcopy of questionnaires. Written and informed consent was taken from the participants. The questionnaire was constructed to evaluate self-esteem in students with AV.

In all statistical calculations, the Statistical Package for the Social Science (SPSS) version 16.0 for Windows software was used. We conducted the Pearson's Chi Square test to assess relationships between categorical groups and sub-groups.

Results

Our study sample consisted of total 374 respondents aged 14-25 years. The frequency of each age group is shown in Table 2. The mean age of our participants was 20.11 years and SD ± 2.80. The participants were divided into two age categories; 14-19 years and 20-25 years. Thirty seven percent of our sample was from 14-19 years of age while the remaining 62.3% were between 20-25 years of age.

Table 1: *Classification of acne vulgaris by Leeds revised by Cunliffe 2003.*

Degree	Characteristics	Severity
I	Predominance of comedones, papules and pustules (small and <10)	Mild
II	10-40 papules and pustules (comedones)	Moderate
III	10-100 papules and pustules< >40 comedones, presence of nodules	Moderate severe
IV	Nodulocystic and congloblata AV with severe, painful lesions, papules, pustules, and comedones	Severe

Table 2: *Demographic data of the population included in this study.*

Characteristic	n (%)
Respondents	
Male	92 (24.6)
Female	282 (75.4)
Mean age ± SD, years	20.11 ± 2.80
Age group	
14-19 years	141 (37.7)
20-25 years	233 (62.3)
Severity	
Degree I	309 (82.6)
Degree II	58 (15.5)
Degree III	5 (1.3)
Degree IV	2 (0.5)
Self-esteem*	
Normal	313 (83.7)
Low	61 (16.3)
AV clinically diagnosed by a physician	
Yes	158 (42.2)
No	216 (57.8)
Treatments tried	
Home remedies	165 (44.1)
Medicines prescribed by a physician	71 (19.0)
Home remedies and medicines prescribed by a physician	41 (11.0)
Home remedies, OTC medicines, and medicines prescribed by a physician	23 (6.1)
OTC medicines	15 (4.0)
Home remedies and OTC medicines	11 (2.9)
OTC medicines, and medicines prescribed by a physician	1 (0.3)
None	47 (12.6)

**As per the Rosenberg Scale*

Abbreviations: AV, acne vulgaris; OTC, over the counter; SD, standard deviation.

Note: In the context of this study and this table, OTC medications were considered to not have been prescribed by a physician. Data regarding medicines (even if OTC) prescribed by physicians have been defined as such.

Our sample included 282 (75.4%) females and 92 (24.6%) males. Even though all participants were reported to have AV, they were asked if they had been diagnosed by a dermatologist. Only 42.2% reported that they have been diagnosed by a dermatologist. All participants were classified into 4 groups according to the severity of AV. Out of 374 participants, 309 had degree 1 acne while 58 had degree 2, 5 had degree 3 and 2 had degree 4 acne.

Table 3: *Self-esteem and its associations with variables.*

Variables	Self-esteem		p-value
	Normal	Low	
Gender			
Male (n=92)	82 (89.1)	10 (10.9)	0.1041
Female (n=282)	231 (81.9)	51 (18.1)	
Age group			
14-19 years (n=141)	120 (85.1)	21 (14.9)	0.5641
20-25 years (n=233)	193 (82.8)	40 (17.2)	
Number of pustules			
Degree I (n=309)	264 (85.4)	45 (14.6)	0.0701
Degree II (n=58)	43 (74.1)	15 (20.9)	0.0512
Degree III (n=5)	4 (80.0)	1 (20.0)	0.5922
Degree IV (n=2)	2 (100.0)	-	-

[1]Chi square, [2]Fisher's Exact

Note: Numbers in brackets represent percentage values, unless otherwise specified.

The respondents were assessed for self-esteem using the Rosenberg Scale and results showed that 313 (83.7%) respondents had normal self-esteem while only 61 (16.3%) had low self-esteem. Splitting the data on the basis of gender showed that a higher percentage of females showed low self-esteem (18.1%) as compared to males (10.9%) as shown in Table 3. Splitting the data according to the age category showed that a higher percentage of respondents belonging from age group 20-25 (17.2%) had low self-esteem as compared to respondents of age group 14-19 (14.9%). Among respondents having AV of degree 2, 25.9% had low self-esteem followed by 20% in degree 3, 14% in degree 1 and 0% in degree 4.

Chi-square test was performed between the severity of AV and the self-esteem of respondents. The 2 sided p-value was 0.171 which is not significant. Chi-square test was also performed between gender of respondent and self-esteem as assessed by Rosenberg. The 2-sided p-value was 1.04 which is not significant

Discussion

The age group 20-25 years was found to have lower self-esteem which was in concordant with other studies, as acne develops in adolescence and has a considerable effect on their self-esteem.'[16] Adolescents have to face many developmental challenges in their social environment, such as changing institutes, building new social networks, changing relations with family members and identity formation and according to another study these social problems have a direct association with low self-esteem and depressive symptoms.[17-19]

The results of our study showed that, among individuals having AV, females were more likely to develop low self-esteem (18.1%) as compared to males (10.9%) and this is in accordance with other studies which suggested the fact that women tends to have marked self-esteem related issues, embarrassment, discomfort, appearance related distress and cosmetic concerns.[18,20] It has also been observed that genetic factor, familial predisposition, hormonal imbalance, premenstrual flares and use of cosmetics products triggers the occurrence of acne among females.[21-23] Although the use of cosmetics can cause aggravation in severity of acne, however, there is substantial evidence present which suggests that educating women about the use of cosmetics has

shown to improve self-esteem in them.[23]

It was found from our study results that students suffering from 1st degree of acne were the least likely to develop low self-esteem, i.e., 14.6%, while those experiencing 2nd and 3rd degree of AV had lower self-esteem than those with 1st degree viz. 25.9% and 20.0% respectively. This sort of result, in which there is a negative correlation between AV and self-esteem, has been reflected by many other studies which implies that, as the severity of acne increases the self-esteem of an individual decreases.[20,23]

According to our study, only 19% of the students went to the dermatologist to get themselves prescribed medication for acne while 44% and 4% used home remedies and over-the-counter (OTC) medicines, respectively. However, 12.6% never took any of the mentioned treatments. This implies that despite being one of the most common dermatological illnesses and having serious impacts on self-esteem, most of the individuals suffering from AV did not seek medical treatment. This result is in accordance with another research which also had similar view about treatment for acne.[24] However, there is literature which supports the idea that patients who are treated with medically prescribed medicine not only have an improvement in their severity of acne but also an improvement in self-esteem.[25]

Many subjects had not taken treatment for a problem that affects their outlook on life, which creates a warning regarding the need to develop awareness programs; moreover, dermatologists also need to work together with local medical communities to encourage early referrals before the damage is done. There is a need to give adolescents, as well as young adults, awareness about AV as well as its impact on a person's self-image, which can be achieved by good counseling, dermatologist opinion and psychiatric guidance.

A basic limitation in our study was the fact that acne was self-reported. Furthermore, it was an educational institute-based, cross-sectional study with a small group including only students from 14 to 25 years of age, so the results cannot be generalized over the population from which sample has been taken. Longitudinal follow up before and after the treatment was also not done.

Conclusion

The results of our study do not indicate the presence of low self-esteem in those with AV. However, this does not disregard the fact that AV is linked to a low self-esteem because the impact of AV is linked to severity and age group. Nevertheless, our study identified possible important mediators, such as awareness regarding treatment of acne, that could be included in future more revolutionary research designs. The strength of this study was the use of a specific scale for the assessment of self-esteem (RSES). The inclusion of samples and severity of acne was also assessed on the basis of specific criteria (Leeds classification) giving it a mutual advantage.

Ethical Approval: The Ethical Review Board, Karachi Medical & Dental College approved this study vide letter No. Ref No. 036/2022.

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Authors' Contribution:

ML: Conception & design, analysis & interpretation of data, drafting of article, critical revision for important intellectual content, final approval

MAR: Drafting of article, analysis & interpretation of data,

SA: Acquisition of data, drafting of article

WY: Acquisition of data, analysis & interpretation of data, drafting of article

MTA: Critical revision for important intellectual content

SMK: Critical revision for important intellectual content

MAR: Analysis & interpretation of data

AA: Acquisition of data, drafting of article

NZ: Drafting of article, critical revision

NA: Critical revision for important intellectual content

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