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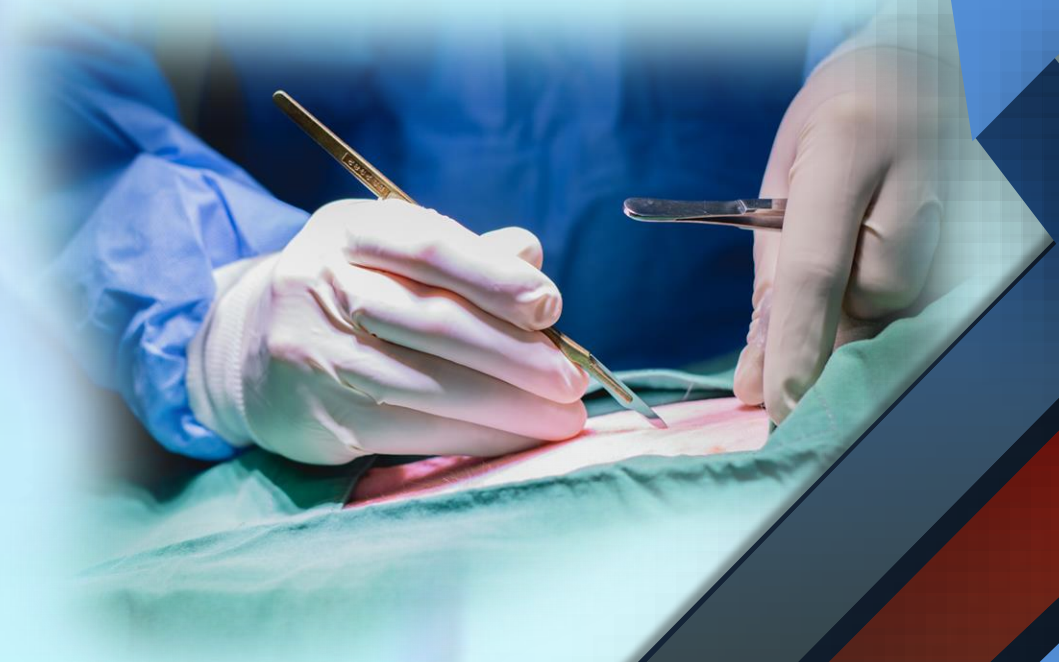

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Original article

Psychological Effects of Acne Vulgaris among Secondary School Adolescents in Damietta Governorate

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ABSTRACT

Background: Acne is reported to have a negative effect on mental health in adolescents.

Aim of the work: Evaluation of the psychological effects of acne vulgaris amongst secondary school adolescents in Damietta Governorate.

Patients and Methods: A cross-sectional study was completed on 172 students with acne vulgaris aged between 15- and 19-years during the period extended from September 2019 to March 2020 in Damietta governorate schools from both sexes. Patients with disorders present before acne or other chronic diseases were excluded from the study. All patients were evaluated by the Arabic version of the Dermatology Life Quality Index [DLQI] to determine the dermatological quality of life [QOL] among acne cases.

Results: 46.8% of cases had body dysmorphic disorders. 82.7% of cases complained of anxiety, with a mean value of 15.47± 11.08. From them, 39.9% had a mild degree, 23.8, 20.3, and 16.1% had moderate, severe, and very severe. 76.9% of cases complained of depression, with a mean value of 13.68 ± 8.55. From them, 45.9%, 28.6, 12.0&13.5% had a mild degree, moderate, severe, and very severe acne. Regarding resilience, only 6.9% had a mild degree, 43.4&49.7 had moderate and high degrees with a mean value of 124.25 ± 18.35. According to our knowledge, this was an early study to assess resilience in acne cases.

Conclusion: The occurrence of anxiety, depression, and body dysmorphic disorders is higher among acne patients in comparison to that of the general population. We found no relation between resilience and acne severity.

Keywords: Acne; Anxiety; Body dysmorphic disorders; Depression; Resilience.

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* Main subject and any subcategories have been classified according to the research topic.

INTRODUCTION

Psychological issues may have significant roles in causing acne in many ways. In several cases, emotional stresses might worsen acne. In a number of cases, psychological complications like low self-esteem, social phobias, or depressions might rise as a result of acne. Furthermore, primary psychiatric diseases, for example, obsessive-compulsive disorders [OCD] and psychosis, might be extremely rooted in complaints that are focusing on acne[1].

The existence of acne may have many negative effects on the quality of life [QOL], self-esteem, and moods in youths. Acne is accompanied by a grown occurrence of anxiety and depression. The existence of these and other comorbid psychological disorders must be located in treating patients with acne, when suitable. A good physicians-patients association and a full history take are of principal significance to recognize the cases at risk for the opposing psychological influences of acne. Many investigations have revealed that psychiatric comorbidities of acne comprise body image disorders, depressions, anxiety, obsessive-compulsive disorder [OCD], delusional disorder, personality disorder, and social phobias. Body dysmorphic disorder [BDD] is a mental health state that is not easily diagnosed; it could cause an excessive deal of suffering, and treating is frequently complexed and challenged. The chief symptom is a subjective sensation of ugliness or of physical defects that the case believing is obvious to others, despite the fact their presence is within the parameters of ordinariness. While the beginning of BDD is frequently within adolescences, case diagnosis is usually developed after several years of illness. It is because of the fact that BDD is frequently unrecognized, and several youths seek nonpsychiatric medical treatment, principally from dermatologists and surgeons [2, 3].

AIM OF THE WORK

This work aimed to evaluate the psychological effects of acne vulgaris between secondary school adolescents in the Damietta governorate. According to our best of knowledge, this was the first study evaluated the psychological effect of acne on adolescent in Damietta governorate.

PATIENTS AND METHODS

A cross-sectional investigation was performed on a randomized school in Damietta governorate on 173 students with acne vulgaris aged between 15 and 19 years from both sexes diagnosed clinically, during the period from September 2019 to March 2020. Patients or their guardians signed informed consent from all parents. The study protocol had the approval of the university's local ethical committee.

Persons with psychiatric disorders present before acne or other chronic diseases were excluded from the study. The Arabic version of DLQI evaluated all cases to determine the dermatological quality of life index [QOl] among acne cases. Psychiatric disorders were diagnosed by questionnaire in Arabic[4]. BDD Questionnaire was used to diagnose BDD[5].

Resilience was assessed by Resilience Scaling [RS], was estimated to be the finest instrument to investigate resilience in the young people because of psychometric features of the instrument and application of various ages, counting youth, it consists of 25 items each is scored fro 1 to 5 the sum of them gives an idea about the level of resistance[6]. The Hamilton Rate Scaling of Depression [HRSD] was utilized to determine the severity of the symptoms of depression. It is one of the most commonly employed and approved instruments to evaluate depression. It comprises 17 items [HDRS17] relating to depression symptoms. Each item is scored from 0 to 4, the summation of scorings of the whole items produce ideas about the symptom's severity of depression. A scoring range of 0–7 is agreed to be in the ordinary range [or in clinical remission], while a scoring of greater than or equal 20 [demonstrating at least moderate severities] is frequently essential for admission to clinical trials. The HAM-A was used to estimate the symptoms severities of anxiety. The scaling comprises 14-items, each one was characterized by a sequence of symptoms, and determine both psychic anxieties [mental anxieties and psychological distresses] and somatic anxieties [physical complaints correlated to anxieties]. Every item is counted from zero [not present] to four [severe], with an overall score ranging between 0 and 56, where <17 specifies mild severities, 18–24

mild to moderate severities, and 25–30 moderate to severe[7, 8].

Statistical analysis: Data were analyzed via SPSS-20.0 software [Armonk, NY: IBM Corp]. The Kolmogorov-Smirnov testing was utilized to evaluate the ordinariness of the variable's distributions. Comparing groups for categorical variables was evaluated via Chi-square testing [Fisher or Monte Carlo]. Students *t*-testing was utilized to match two groups for normally distributed quantitative variables, whereas ANOVA was employed to compare among more than two groups and followed by Post-Hoc testing [Tukey] for pairwise comparing. Kruskal Wallis testing was utilized for comparison of different groups for not normally distributed quantitative variables and tailed by Post Hoc testing [Dunn's for multi-comparisons testing] for pairwise comparing. Spearman coefficient was employed to associate among quantitative variables. The results were considered significant at the 5% level.

RESULTS

The mean value of ages in our cases was 16.39 ± 0.99 and ranged from 15.0 to 19.0 years. Female patients consisted the majority of patients [65.3%]. Regarding acne severity, the majority had a mild degree of acne [69.4%], and 25.4 and 5.2% had moderate and severe acne, respectively. BDD was reported in 46.8% of cases.

Regarding anxiety, 82.7% of cases complained of anxiety. 39.9% had mild degree, 23.8, 20.3, and 16.1% had moderate, sever and very sever. As regards to depression, 76.9% of cases complained from depression, with mean value of 13.68 ± 8.55. from them, 45.9% had mild degree, 28.6, 12.0 & 13.5% had moderate, sever and very sever. As regards to resilience, only 6.9% had mild degree, 43.4&49.7 had moderate and high degree with mean value of 124.25 ± 18.35.

Body dysmorphic disorders [BDD] significantly predominate among female patients [74.1%] than males [25.9%] [p=0.023]. There was a significantly higher incidence of BDDs in moderate acne severity [45.7%] than mild [44.4%] and severe cases [9.9%] [p=<0.001]. Also, there was non-significant relation between body dysmorphic syndrome and patients' age [p=0.494] [Table 1]. A significant change was found among males and females in anxiety severity [p<0.001] [The very severe, then severe, moderate, and mild degree significantly predominate in females while mild then moderate and severe degree was significantly predominating in males. Also, there was a significant relationship between age and anxiety severity [p=0.04] as older age had very severe anxiety. There was a significant difference in anxiety severity between different acne severity [p=0.008] [Table 2]. A significant change was found among males and females in depression severity [p=0.009] as very severe, then moderate and mild degree significantly predominate in female while severe then moderate and mild degree was significantly predominating in male. There was on significant relation between age and depression severity [p=0.108]. A significant change was found in depression severity among different acne severity [p=0.001] [Table 3]. A significant change was found among males and females in resilience severity [p<0,001] as moderate degree significantly predominates in females while high degree was significantly predominating in males. Also, there was non-significant relation between age and resilience severity [p=0.260].

On the other hand, there was a non-significant difference in resilience severity between different acne severities [p=0.676] [Table 4].

The mean score of anxiety has a high significance in moderate acne severity [19.64 ± 13.29] than in mild cases [13.92 ± 9.85] as p=0.013. On the other hand, no significant difference in anxiety between mild and severe acne cases and between moderate and severe cases [p= 0.54 & 0.502 respectively]. On the other hand, the mean score of depression or Resilience not significantly different between the different degrees of acne severity [p = 0.561 & 0.726 respectively] [Table 5].

A significant positive association was found among acne severities and anxiety. In contrast, there was a nonsignificant negative association between acne severity and either depression or resilience.

Table [1]: Relation between body dysmorphic disorders and different parameters.

		Body dysmorphic disorders				p
		Absent [n = 92]		Present [n = 81]		
		No.	%	No.	%	
Sex	**Male**	39	42.4	21	25.9	0.023*
	Female	53	57.6	60	74.1	
Age [years]	**Min. – Max.**	15.0 – 19.0		15.0 – 18.0		0.494
	Mean ± SD.	16.43 ± 1.09		16.33 ± 0.85		
	Median	16.0		16.0		
Acne severity	**Mild**	84	91.3	36	44.4	^{MC}p <0.001*
	Moderate	7	7.6	37	45.7	
	Sever	1	1.1	8	9.9	

χ2: Chi-square testing, MC: Monte Carlo, t: Student t-testing, * denotes statistical significance, SD: stander deviation.

Table [2]. Relations among anxiety and various parameters.

		Anxiety										p
		No [n = 30]		Mild [n = 57]		Moderate [n = 34]		Sever [n = 29]		Very severe [n = 23]		
		No.	%	No.	%	No.	%	No.	%	No.	%	
Sex	**Male**	12	40.0	30	52.6	13	38.2	4	13.8	1	4.3	<0.001*
	Female	18	60.0	27	47.4	21	61.8	25	86.2	22	95.7	
	p No			0.262		0.885		0.024*		0.003*		
				p_1=0.183, p_2<0.001*, p_3<0.001*, p_4=0.029*, p_5=0.004*, p_6=0.368								
Age [years]	**Min. – Max.**	15.0 – 17.0		15.0 – 19.0		15.0 – 19.0		15.0 – 19.0		15.0 – 18.0		0.040*
	Mean ± SD.	16.0 ± 0.83		16.54 ± 0.93		16.59 ± 0.92		16.48 ± 1.21		16.09 ± 0.95		
	Median	16.0		16.0		16.0		16.0		16.0		
	p No			0.014*		0.016*		0.057		0.746		
				p_1=0.833, p_2=0.782, p_3=0.058, p_4=0.667, p_5=0.057, p_6=0.145								
Acne severity	**Mild**	24	80.0	43	75.4	28	82.4	14	48.3	11	47.8	^{MC}p= 0.008*
	Moderate	5	16.7	12	21.1	6	17.6	13	44.8	8	34.8	
	Sever	1	3.3	2	3.5	0	0.0	2	6.9	4	17.4	
	p No			0.900		0.866		0.025*		0.037*		
				p_1=0.643, p_2=0.033*, p_3=0.023*, p_4=0.011*, p_5=0.006*, p_6=0.498								

* denotes statistically significant, χ2: Chi-square testing, MC: Monte Carlo, F: F for ANOVA testing, pairwise comparing bet. Every 2 groups were performed via Post Hoc Testing [Tukey, p: p-value for correlation among different categories, pNo: p-value for matching among no anxiety and every other group, p1: p-value for comparison among mild and moderate, p2: p-value for comparison among mild and sever, p3: p-value for comparison among mild and very severe, p4: p-value for comparison among moderate and severe, p5: p-value for comparison among moderate and very severe, p6: p-value for comparison among sever and very sever, SD: stander deviation.

Table [3]: Relation among depression and various parameters

		Depression										p
		No [n = 40]		Mild [n = 61]		Moderate [n = 38]		Sever [n = 16]		Very sever [n = 18]		
		No.	%	No.	%	No.	%	No.	%	No.	%	
Sex	**Male**	21	52.5	19	31.1	12	31.6	7	43.8	1	5.6	0.009*
	Female	19	47.5	42	68.9	26	68.4	9	56.3	17	94.4	
	p No			0.032*		0.062		0.554		0.001*		
		p_1=0.964, p_2=0.343, p_3=0.032*, p_4=0.392, p_5=0.042*, p_6=0.014*										
Age [years]	**Min. – Max.**	15.0 – 18.0		15.0 – 19.0		15.0 – 19.0		15.0 – 19.0		15.0 – 18.0		0.108
	Mean ± SD.	16.20 ± 0.85		16.38 ± 0.95		16.53 ± 1.01		16.88 ± 1.15		16.11 ± 1.08		
	Median	16.0		16.0		16.0		17.0		16.0		
Acne severity	**Mild**	29	72.5	46	75.4	29	76.3	6	37.5	10	55.6	^{MC}p= 0.001*
	Moderate	6	15.0	15	24.6	9	23.7	9	56.3	5	27.8	
	Sever	5	12.5	0	0.0	0	0.0	1	6.3	3	16.7	
	p No			0.011*		0.067		0.012*		0.405		
		p_1=0.919, p_2=0.005*, p_3=0.010*, p_4=0.012*, p_5=0.033*, p_6=0.286										

* denotes statistically significant, χ2: Chi-square testing, MC: Monte Carlo, F: F for ANOVA test, Pairwise comparison bet. each 2 groups were done using Post Hoc Test [Tukey, p: p-value for the association between different categories], pNo: p-value for comparing between no anxiety and each other group, p1: p-value for comparing between mild and moderate, p2: p-value for comparing between mild and severe, p3: p-value for comparing between mild and very severe, p4: p-value for comparing between moderate and severe, p5: p-value for comparing between moderate and very severe, p6: p-value for comparing between sever and very sever, sd: stander deviation.

Table [4]: Relation between resilience and different parameters.

		Resilience						p
		Mild [n = 12]		Moderate [n = 75]		High [n = 86]		
		No.	%	No.	%	No.	%	
Sex	**Male**	3	25.0	11	14.7	46	53.5	<0.001*
	Female	9	75.0	64	85.3	40	46.5	
		p_1=0.400, p_2=0.064, p_3<0.001*						
Age [years]	**Min. – Max.**	16.0 – 18.0		15.0 – 19.0		15.0 – 19.0		0.260
	Mean ± SD.	16.83 ± 0.94		16.33 ± 1.02		16.37 ± 0.96		
	Median	16.50		16.0		16.0		
Acne severity	**Mild**	9	75.0	48	64.0	63	73.3	^{MC}p= 0.676
	Moderate	3	25.0	23	30.7	18	20.9	
	Sever	0	0.0	4	5.3	5	5.8	

* denotes statistically significant, $\chi 2$: Chi-square testing, MC: Monte Carlo, F: F for ANOVA test, Pairwise comparison between every 2 groups were done using Post Hoc Test [Tukey, p: p values for correlation among various classes], p: p-value for correlation among various classes, p1: p-value for comparison among Mild and Moderate, p2: p-value for comparison among mild and high, p3: p-value for comparison among moderate and high, SD: stander deviation.

Table [5]: Relation between Acne severity and different parameters

Variable	Statistical measures	Acne severity			H	p
		Mild [n = 118]	Moderate [n = 44]	Severe [n = 10]		
Anxiety	**Min. – Max.**	0.0 – 38.0	0.0 – 43.0	2.0 – 27.0	6.199*	0.045*
	Mean ± SD.	13.92 ± 9.85	19.64 ± 13.29	15.40 ± 10.51		
	Median	13.0	20.0	21.0		
		p_1=0.013*, p_2=0.540, p_3=0.502				
Depression	**Min. – Max.**	0.0 – 35.0	1.0 – 31.0	2.0 – 23.0	1.156	0.561
	Mean ± SD.	13.74 ± 8.67	14.18 ± 8.19	10.80 ± 8.98		
	Median	13.0	12.50	6.0		
Resilience	**Min. – Max.**	61.0 – 163.0	83.0 – 154.0	110.0 – 144.0	0.641	0.726
	Mean ± SD.	124.10 ± 19.14	123.80 ± 17.09	128.0 ± 14.91		
	Median	125.0	119.50	136.0		

* denotes statistically significant, H: H for Kruskal Wallis testing, Pairwise comparing between every 2 groups were performed via Post Hoc Testing [Dunn's for multi-comparing testing], p: p-value for correlation among various classes, p_1: p-value for comparison among mild and moderate, p_2: p-value for comparison among mild and sever, p_3: p-values for comparison among moderate and severe, SD: stander deviation.

DISCUSSION

In our study, 46.8% of cases had body dysmorphic disorders [BDD]. Other researches on general dermatologic cases have concluded a BDD prevalence ranging from 6 to 12%, that lower than the results of the current study[9, 10].

The comparatively higher ratings in the current work might be because of the changes in methodology. An additional reason might be changed in social standards, cultural standards, and values that might affect the occurrence of body dysmorphic syndrome. Also, it may be due to the high rate of females in our study as females are more affected by psychological problems.

BDD Prevalence in the overall populace is 1.7 to 2.9% [National Institute of Mental Health 2017].

In our study, 82.7% of cases were found to have anxiety, 39.9% had a mild degree, 23.8, 20.3&16.1% had moderate, severe, and very severe. In a study by Golchai et al. found anxieties were found in 68.3% of the cases; the mean scorings of anxieties and depressions were 9.26 ± 0.382 that is near to the current work results. [11] Moreover, Van et al. found the prevalence of anxiety and depression was 57.55% for the patient group[12]. The prevalence of anxiety in the general population is 14.3 to 23.4 % [National Institute of Mental Health 2017].

In our study, 76.9% of cases complained from depression, 45.9, 28.6, 12.0 & 13.5% had a mild degree, moderate, severe, and very severe acne. This high prevalence was also detected in another study, as Kang et al. reported that the rate of depression was 63.1 percent among 181 patients with facial acne.[13] Similarly, according to BDI-II

scores, Ahmed et al. found 70%of the participants with acne also had depression[14]. Many investigations have concluded that the level of depressions in 25.6% and 31.1% of acne cases, respectively[15, 16]. The prevalence of depression in the general population is 7.1 to 13 % [National Institute of Mental Health 2017]

In our study, as regards resilience, only 6.9% had a low level, 43.4 & 49.7 had a moderate and high level, respectively. According to our knowledge, this was the first study to assess resilience in acne cases. Many psychoneuroendo-crinological and psycho-immunological theories were suggested to explain this association, as the amplified level of corticotropin-release hormone, adrenal androgen, and glucocorticoid secondary to stressful events may negatively affect the cutaneous permeability, increased lipid synthesis in the epidermis, and inhibited the antimicrobial defense barriers. Moreover, constituent P may increase sebaceous glands proliferations that aggravated acne lesion[17].

In our study, the incidence of BDDs significantly predominates among female patients [74.1%] than males [25.9%] as p=0.023. This was in harmony with the study by Marron et al. showed that cases that detected positive for BDD were 80% women, compared with 60% of cases with no BDD[18]. In contrast with the current study, Bowe et al. found that screen for BDD showed and nonsignificant changes were found regarding gender. [19]

In our study, there was a significantly higher incidence of BDDs in moderate acne severity [45.7%] than in mild [44.4%] and severe cases [9.9%]. Nearly identical results of the current work were reported Uzun et al. concluded a lower incidence of BDD with mild acne degree. [20] In disagreement with this study, Bowe et al. found nonsignificant changes regarding acne severity[19]

In the current work, A nonsignificant correlation was found among body dysmorphic syndrome and patient's age. This agrees with Marron et al., who found non-significant relation between body dysmorphic syndrome and a patient's age[18]. In contrast, Bowe et al. reported a significant change was found regarding ages, with older cases admitted to the cosmetic clinic[19].

In our study, a significant change was found among males and females in Anxiety severity [p<0.001] as very severe, then severe, moderate, and mild degree significantly predominate in female while mild then moderate and the degree was significantly predominating in male. Some investigations have reported identical results and established higher risks of anxiety and a higher QoL impairment in females than in males suffering from acne vulgaris[21-24].

In disagreement with our study, Golchai et al. reported that prevalence and mean scorings of anxieties had no relationship with sex[11]

In the current work, a significant correlation was found among age and anxiety severities [p=0.04] as older age had very severe anxiety. In contrast, Golchai et al. found a nonsignificant change in incidences of anxieties and means of their scorings among the studied groups of being ≤ 20-yrs old and > 20-yrs old[11].

In our study, the mean score of anxiety was significantly higher in moderate acne severity than in mild cases. On the other hand, no significant difference in anxiety between mild and severe acne cases and between moderate and severe cases. So, anxiety had a significant positive correlation with acne severity. This agrees with the study by Grahame et al., in which they were found a positive association among severities of acne and anxiety. [25] Furthermore, in the results of Erdemir et al., the acne severities weren't only recognized by the physician but also by the cases that displayed a positive association with anxiety[22].

In disagreement with our study, Golchai et al. found prevalence and mean scorings of anxieties have no association with acne severity[25]. Also, Berry found no significant association between anxiety over the two-week period and objective ratings of acne severity over the two-week[26].

In our study, a significant change was found among males and females in depression severity as very severe, then moderate and mild degree significantly predominate in female while severe then moderate and mild degree was significantly predominating in male. These results were in line with some studies reported higher incidence of

depression in women[27, 28]. On the contrary, Mishra et al. found nonsignificant change among men and women[29].

In the current work, a nonsignificant relation between age and depression severity [p=0.108]. Golchai et al., there was no significant change in incidences of depressions and means of their scoring among the studied groups of ages ≤ 20-yrs and > 20-years[11].

In our study, a significant change was found between in incidences of different degrees of depressions severity among different acne severity [p=0.001] On the other hands, mean score of depression has non significantly negative correlation with different degree of acne severity [p=0.561]. This indicated that depression severity significantly escalates with higher AV severity, as reported in many studies[30, 31].

In contrast, Berry found that a nonsignificant association existed among depressions over the two weeks and acne over the two weeks[26].

In our study, a significant change was found among males, and female sin resilience severity as moderate degree significantly predominate in female while high degree was significantly predominating in male. On the other hand, there was a non-significant difference between the incidence of different degrees of resilience severity or its mean value with the age and different acne severity, although it was negative related to acne severity. According to our knowledge, this was the first study correlated between different clinical parameters in acne and Resilience severity. Many researchers supported our results found that women with acne were more expected to suffer from higher self-consciousness[32-35], lower self-esteem and self-worth feeling, body dissatisfaction, and greater feelings of uselessness.

This study's limitations include being a hospital-based study with a relatively small study population, the estimates of psychiatric comorbidity in dermatological patients could be falsely inflated, no validated checklist was used to rule out ongoing psychosocial problems in the family. Another limitation was the use of subjective self-reporting scaling which might be exaggerated by the subject's feeling. Also, the deficiency of controls and smaller sample sizes was another restriction of this work.

We recommended that; a longitudinal study on a larger community-based compared between the data of the cases previous and afterward the onset of acne vulgaris and before and after effective treatments may further consistently demonstrating the psychiatric influences made by acne vulgaris. Moreover, investigation including all acne types is necessary to be established the prevalence of depressions and anxiety between acne cases.

Conclusion: In our study the occurrence of anxiety, depression, and body dysmorphic disorders is higher among acne patients than that of the general population we found no relation between resilience and acne severity. For this reason, attention concerning psychological impairments and case's self-assessing of depressions is important during acne treatment.

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None

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