Anxiety, depression, social phobia, and quality of life in Turkish patients with acne and their relationships with the severity of acne

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Aim: To investigate the psychiatric characteristics of acne vulgaris and the effects of the disease on quality of life.

Materials and methods: We included 70 acne patients and 50 healthy controls. The Structured Clinical Interview for DSM-IV Axis I Disorders, Hospital Anxiety and Depression Scale, Liebowitz Social Anxiety Scale, Quality of Life Scale Short Form, and Acne Quality of Life Questionnaire were applied.

Results: Anxiety and depression scores of the acne patients were significantly higher than those of the control group. In patients with acne, significantly higher levels of social anxiety were detected. Social anxiety levels of severe acne cases were significantly higher. Social phobia was the most common axis I disorder. According to the SF-36 scale, vitality, social functioning, and emotional role difficulty scores were significantly higher in acne patients.

Conclusion: Especially when acne vulgaris is severe, psychiatric evaluation and psychotherapeutic interventions particularly aimed at social anxiety symptoms and social functioning should be important parts of the treatment plan.

Key words: Acne vulgaris, depression, social anxiety, quality of life

1. Introduction

As a sense organ, the skin is the site of events and processes crucial to the way we think about, feel about, and interact with one another (1). To have normal skin seems to be a necessary prerequisite both in terms of an individual's physical and mental health, and also sexual attractiveness (2).

Acne is a chronic inflammatory disease characterized by lesions such as comedones, papules, pustules, and nodules of pilosebaceous glands. Generally, it starts in adolescence and regresses in the mid-20s. (3). Many psychological problems associated with acne have been reported to date. These include decrease in self-esteem, impaired overall perception of his/her well-being and self-image, embarrassment, fear of rejection, social withdrawal, anger, restrictions in lifestyle, problematic family relations, excessive mental engagement in his/her acne, depression, and anxiety (4); higher risks of suicide have even been reported in patients with acne (5,6). The mental health impairment scores among acne patients are higher compared to a number of other chronic, nonpsychiatric medical conditions, including epilepsy and diabetes (7).

Ample literature sources are available about acne and acne-related psychiatric concepts. Despite this, the relationship between acne and psychopathology is not yet clearly established. A majority of the literature studies have not indulged in clinical psychiatric evaluation. For example, it has been emphasized that acne is actually a disorder associated with depression and anxiety. However, more emphasis is placed on the use of rating scales designed for the evaluation of anxiety and depression, or in other words on the severity of symptoms of depression and anxiety. Some studies have detected a higher incidence of depression and anxiety compared with the control or other disease groups (4,7–9). In addition, acne treatment also alleviated negative psychological conditions observed in patients with acne (10). Many studies are available demonstrating the deterioration of the quality of life, higher level of anger (7), and difficulties in social and functional context in acne patients (8). However, clinical

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psychiatric evaluations were not performed in these studies. Severity of psychiatric symptoms was measured, which did not sufficiently explain the relationship between acne and its related psychopathology. However, shame, embarrassment, anger, and other similarly unfavorable emotional states and concepts of quality of life impairment define conditions that can be observed during daily life activities irrespective of psychiatric disorders.

Even though many studies have dealt with psychological problems and psychiatric symptoms, social anxiety and factors related to quality of life were not investigated adequately. Acne vulgaris is a disease of adolescence. When the importance of body image in adolescence and cosmetic problems are considered in combination, analysis of social anxiety level in acne patients is an obvious necessity. The purpose of this study was to determine social anxiety levels in patients with acne and to investigate sociodemographic and clinical characteristics, depression symptoms, and their effects on the quality of life of the patients.

2. Material and methods
The study included 70 outpatients with acne vulgaris 16–30 years old who consulted a dermatology clinic, and also 50 age-, sex-, educational-matched healthy volunteers without acne. The purpose of the study was explained to the patients and control group participants, and their informed consents were obtained for participation. In addition, the local ethics committee approved the study. Individuals with mental retardation, psychotic disorders, dementia, delirium, and other amnestic disorders and those who refused to participate were not included in the study.

2.1. Procedures
The following scales were used:
Structured Clinical Interview for DSM-IV Axis I (SCID-I):

The reliability analyses of the Turkish form were performed by Özkürkçügil et al. (11).

Hospital Anxiety and Depression Scale (HADS): Turkish reliability and validity study of the form was performed by Aydemir et al. (12).

Liebowitz Social Anxiety Scale (LSAS): Validity and reliability analyses of the Turkish form were done by Soykan et al. (13).

Quality of Life Scale Short Form (SF-36): Validity and reliability analyses of the Turkish version were done by Koçyiğit et al. (14).

Acne Quality of Life Scale (AQoL): Reliability studies of the Turkish version were carried out by Demirçay et al. (15).

2.2. Analysis
For statistical analysis, SPSS 10.0 was used. In comparisons of the 2 groups, Student's t-test, the Mann–Whitney U test, and chi-square tests were employed. For the comparisons among 3 groups, the Kruskal–Wallis test and chi-square tests were utilized. $P < 0.05$ was accepted to flag significance.

3. Results
In the clinical evaluation of 70 patients aged 16–30, according to the classification proposed by Gollnick and Orfanos (16), the patients were divided into 4 groups based on the number of their facial and truncal lesions. Since patients were not distributed equally among groups, patients in the first 2 groups were classified as patients with mild acne, and patients in groups in 3 and 4 as severe cases of acne (16,17) (Table 1).

Acne subgroups and the control group were well matched for age and sex (Table 2). The groups also did not differ statistically in terms of disease duration and age at the onset of the disease (Table 3).

Table 1. Clinical classification of acneic lesions.

Grade 1	Less than 10 inflammatory facial lesions	n = 15 (21.4%)	Mild Acne
Grade 2	Inflammatory facial lesions: 10–20	n = 21 (30%)	n = 36 (51.4%)
Grade 3	Inflammatory truncal lesions	n = 12 (17.2%)	Severe Acne
Grade 4	Nodules and eschars on face and/or body	n = 22 (31.4%)	n = 34 (48.6%)

Table 2. Comparisons of age and sex of acne patients and control subjects.

	Mild acne group (n = 36)	Severe acne group (n = 34)	Control group (n = 50)	P
Age	19.58 ± 2.677	18.97 ± 3.407	18.67 ± 2.835	0.579
Sex (%)				0.444
Female	24 (75%)	21 (61.8%)	36 (72%)	
Male	9 (25%)	13 (38.2%)	14 (28%)	

Table 3. Comparisons of duration and age at onset of the disease.

	Mild acne group (n = 36)	Severe acne group (n = 34)	P	df
Duration of the disease (years)	4.14 ± 2.890	3.88 ± 2.637	0.3925	68
Age at onset of the disease (years)	15.22 ± 1.869	15.09 ± 1.676	0.3057	68

Distribution of patients with mild acne among SCID-1 diagnostic groups was as follows: social phobia (n = 4; 11%), depression (n = 3; 8%), depression + obsessive compulsive disorder (OCD; n = 1; 2.7%), bipolar disorder I in remission (n = 1; 2.7%), panic disorder (n = 1; 2.7%), and social phobia + depression (n = 1; 2.7%). In the severe acne group, social phobia (n = 9; 26%), depression (n = 3; 8.8%), OCD (n = 1; 2.9%), body dysmorphic disorder (BDD; n = 2; 5.8%), and social phobia + depression (n = 1; 2.9%) were detected (Table 4).

Anxiety and depression scores in acne patients were statistically higher when compared with the control group (P < 0.05). When levels of social anxiety in the groups were analyzed according to the LSAS, in the patient group, Liebowitz anxiety (LBW/anxiety), Liebowitz/avoidance (LBW/avoidance), and Liebowitz/total scores were significantly higher relative to the control group (P < 0.001) (Table 5).

In subgroup comparisons of acne patients, anxiety and depression scores did not differ statistically significantly between mild and severe acne groups. In the severe acne group, LBW/anxiety and LBW/total scores were

statistically significantly higher than those of the mild acne group (P < 0.01) (Table 6).

In the SF-36 results, no significant differences were found between acne and control groups apart from SF-36 scores of vitality (P < 0.05), social functioning (P < 0.05), and emotional role difficulties (P < 0.05). Lower scores related to domains of vitality, social functioning, and emotional role difficulties were detected in the acne group (Table 7).

No significant differences between SF-36 scale scores of the individuals with severe and mild acne were found, except for the difficult physical role functioning subscale scores (P < 0.05). Physical role difficulty score was lower in the severe acne patients (P = 0.013) (Table 8).

Acne patients were evaluated according to the AQoL scale, and the patients in the severe acne group had significantly higher (i.e. worse) scores. Their responses to the relevant questions revealed that: 1) they felt uneasy next to others, 2) they had little enthusiasm in socializing, 3) they experienced difficulties with their relationships, 4) they felt like "outcasts", (5) they feared becoming objects of mockery, (6) and they thought that they would be rejected

Table 4. Comparisons of the acne subgroups according to presence of SCID-I diagnoses.

SCID-I	Mild acne group (n = 36)	Severe acne group (n = 34)	χ²	df	P
Presence	11 (30.5%)	16 (47%)	1.374	1	0.2412
Absence	25 (69.5%)	18 (53%)			

Table 5. Comparisons between acne and control groups according to Hospital Anxiety and Depression Scale (HADS) and Liebowitz Social Anxiety Scale (LSAS) scores.

	Acne group (n = 70)	Control group (n = 50)	t	df	P (2-tailed)
HADS/Anxiety	8.11 ± 4.29	6.40 ± 2.90	2.4461	118	0.016**
HADS/Depression	6.00 ± 3.19	4.19 ± 2.80	3.2217	118	0.001**
HADS/Total	14.21 ± 7.48	10.59 ± 5.70	2.8760	118	0.004**
LBW/Anxiety	49.10 ± 12.08	42.46 ± 9.42	3.2443	118	0.0015**
LBW/Avoidance	45.40 ± 11.16	37.56 ± 8.85	4.123	118	0.0001**
LBW/Total	94.84 ± 22.56	80.02 ± 17.65	3.874	118	0.0002**

**: Statistically significant.

Table 6. Comparisons between acne subgroups according to Hospital Anxiety and Depression Scale (HADS) and Liebowitz Social Anxiety Scale (LSAS) scores.

	Mild acne group (n = 36)	Severe acne group (n = 34)	t	df	P
HADS/Anxiety	7.91 ± 4.22	8.65 ± 4.36	0.7216	68	0.473
HADS/Depression	5.50 ± 3.35	6.53 ± 2.97	1.3581	68	0.178
HADS/Total	13.11 ± 6.50	15.18 ± 6.49	1.3327	68	0.298
LBW/Anxiety	45.31 ± 11.54	53.12 ± 11.47	2.8383	68	0.0060**
LBW/Avoidance	42.89 ± 10.75	48.06 ± 11.13	1.974	67.42	0.052
LBW/Total	88.19 ± 21.64	101.88 ± 21.63	2.644	68	0.010**

**: Statistically significant.

Table 7. Comparisons between SF-36 subscale scores in acne and control groups.

	Acne group (n = 70)	Control group (n = 50)	t	df	P (2-tailed)
Physical functioning	87.63 ± 16.57	89.48 ± 14.61	0.6329	118	0.528
Physical role difficulty	61.79 ± 36.54	65.50 ± 30.67	0.5854	118	0.559
Pain	70.54 ± 24.70	74.62 ± 24.55	0.8943	118	0.373
General health state	62.06 ± 20.40	65.70 ± 20.22	0.9672	118	0.335
Vitality	54.00 ± 22.86	63.60 ± 19.82	2.3948	118	0.0182**
Social functioning	64.69 ± 26.68	74.58 ± 22.13	2.1458	118	0.034**
Emotional role difficulty	48.33 ± 37.89	63.86 ± 41.45	2.1283	118	0.035**
Mental health state	56.04 ± 21.66	62.46 ± 19.40	1.6708	118	0.0974

**: Statistically significant.

in romantic relationships because of their acne (P < 0.05) (Table 9).

4. Discussion

The HADS scores were significantly higher in patients with acne than in the control group (P < 0.05). In a study conducted in Turkey, in individuals with acne, in addition to depression and obsessive-compulsive symptoms, interpersonal sensitivity scale scores were also found to be increased (18). In a study by Niemeier et al., depression and social anxiety assessments were conducted in patients with acne, and it was suggested that these scores were increased in acne patients and the disease generated constraints in the lives of these individuals (19). Interestingly, patients with acne manifested more serious psychological discomfort when compared with patients with asthma, diabetes, arthritis, back pain, or coronary artery disease. Some studies emphasized that acne patients had higher anxiety and depression scores even when compared with patients with psoriasis and those referred to oncology and dermatology clinics (4,9).

In acne patients, anxiety, depression, anger, and impairment in the perception of body image were identified (20). In a previous study, depression and suicidal thoughts were detected in 7.2% of acne patients. Some available data suggest that these negative psychological effects may be relieved by effective acne treatment. However, some studies asserted that the level of anxiety and depression in patients with acne remains unchanged (21). Özcan et al. compared acne vulgaris patients with healthy controls and reported increased frequency of anxiety and depression among patients without any statistically significant difference between the groups. The authors tried to explain this unexpected outcome with the concept of alexithymia, which the authors thought to play an important role in the development of psychosomatic diseases (22). Our study also substantiates the results of studies that have reported higher scores for anxiety and depression in acne patients.

Outcomes of studies investigating whether or not severity of psychiatric disorders induced by the disease was in accordance with the clinical severity of acne contradict each other. Niemeyer et al. found that even though acne caused emotional stress and psychosocial problems in acne patients, no relationship between these factors and severity of acne existed (19). Wu et al. (23) found a direct correlation between levels of depression and anxiety and the severity of acne. Contrarily, in our study, we could not find a significant difference between depression scores of the acne severity subgroups. Only Liebowitz anxiety scores were found to worsen with the severity of acne.

Table 8. Comparisons between SF-36 subscale scores among acne groups.

	Mild acne group (n = 36)	Severe acne group (n = 34)	t	df	P (2-tailed)
Physical functioning	90.22 ± 14.67	85.29 ± 18.25	1.2491	68	0.216
Physical role difficulty	72.22 ± 35.74	50.74 ± 34.53	2.5548	68	0.013**
Pain	71.50 ± 21.86	69.53 ± 27.68	0.3314	68	0.741
General health state	61.78 ± 20.29	62.39 ± 20.81	0.1242	68	0.907
Vitality	56.11 ± 21.71	51.76 ± 24.14	0.7936	68	0.431
Social functioning	68.92 ± 24.65	60.21 ± 28.35	1.3739	68	0.174
Emotional role difficulty	52.53 ± 36.83	43.88 ± 39.02	0.9542	68	0.344
Mental health state	59.14 ± 20.84	54.76 ± 22.33	0.8489	68	0.398

**: Statistically significant.

Table 9. Comparisons of acne subgroups according to Acne Quality of Life Scale.

	Mild Acne Group (n = 36)	Severe Acne Group (n = 34)	t	df	P (two-tailed)
Feelings of uneasiness next to others	2.08 ± 0.73	2.53 ± 1.02	2.1317	68	**0.0366****
Decrease in socialization	1.75 ± 0.90	2.47 ± 0.99	3.1868	68	**0.0022****
Difficulties in relationships with partner/spouse	1.78 ± 0.92	2.38 ± 0.98	2.6421	68	**0.0102****
Difficulties in relationships with close friends	1.64 ± 0.86	1.76 ± 0.98	0.5453	68	0.574
Difficulties in relationships with immediate family members	1.72 ± 0.91	2.00 ± 1.04	1.2006	68	0.234
Feeling like an outcast	1.67 ± 0.82	2.22 ± 0.89	2.6909	68	**0.009****
Being a subject of mockery	1.33 ± 0.67	1.94 ± 0.91	3.2062	68	**0.0021****
Feeling rejected in a romantic relationship	1.44 ± 0.65	2.15 ± 1.07	3.3767	68	**0.0012****
Feeling rejected by friends	1.22 ± 0.48	1.41 ± 0.74	1.2816	68	0.2043
Total score (pts)	14.64 ± 5.09	18.91 ± 5.60	3.3415	68	**0.0014****

In one of the few studies that involved psychopathologic and clinical psychiatric evaluations in acne patients, Khan et al. (24) conducted psychiatric assessments on acne based on ICD-10 criteria, and they encountered a diagnosis of depression in 38% of the patients. This rate was higher both from that identified in the normal population and that in the other group with seborrheic dermatitis. In this study, incidence of social anxiety was higher in acne patients, and depression was more frequently observed among women. In a study performed by Uzun et al. (25), who used the structured clinical interview for DSM-IV axis I disorders (SCID-1), 14 of 159 acne patients were diagnosed with BDD. In addition, the patients were diagnosed with social phobia (n = 11), depression (n = 99), dysthymia (n = 7), generalized anxiety disorder (n = 3), OCD (n = 3), and somatization disorder (n = 3). Phillips et al. (26) detected BDD in 11.9% of 268 study patients. However, the authors only used the BDD scale, without clinical psychiatric evaluation. In our study, as a result of clinical evaluation based on DSM-IV TR criteria, social phobia was more frequently seen, while BDD was encountered less often. This phenomenon might be attributed to adolescents being timid and shy, rather than their perceptions about their body image. In a significantly greater proportion of the patients with severe acne, social anxiety levels were higher than in the mild acne group, emphasizing the importance of body image. Severity of social anxiety increases significantly as the lesions worsen, and their treatment becomes more challenging.

Acne vulgaris is a disease of adolescence. When the importance of body image in adolescence and cosmetic problems are considered in combination, obviously the level of social anxiety in patients with acne should be investigated (27). In a study performed on 73 patients with mild to moderate acne and 48 healthy control subjects, where the study participants were evaluated with the LSAS, significantly higher anxiety and avoidance scores were detected in acne patients (17). Although we detected similar results in our study, we revealed higher anxiety scores in patients with severe acne relative to cases of mild

acne. Even though social concerns of patients with severe acne are more dramatically affected by the severity and persistence of lesions and by external appearance, their avoidance scores are identical to those with mild cases of acne. This may be explained by social obligations and societal expectations. In addition, generally social anxiety and avoidance behaviors seen in acne patients can be explained especially by exaggeration of adverse effects of the disease on external appearance in adolescent acne patients when compared with the healthy group. On the other hand, we should mention that the H criterion for the diagnosis of social phobia in DSM-IV can be understood as it prohibits the diagnosis of social phobia for patients with physical disorders. This restriction for the social phobia diagnosis might serve as a barrier for the diagnosis and treatment of the patients who have disfiguring medical conditions like acne vulgaris. In our study, we left the H criterion out to be able to make the diagnosis.

For the measurement of quality of life in acne patients, both global and acne-specific tests have been used. Although comparisons between the results of these studies based on different scales are difficult to make, all these studies have demonstrated adverse effects of acne on quality of life (28). Because of distortion of the external appearance in acne patients, as a natural outcome related parameters in domains of social functioning and emotional role difficulties are especially adversely affected. Determination of lower scores is expected in the patients with severe clinical manifestations. However, unlike our study, most of the studies have reported that even though the quality of life of patients was adversely affected by acne, this effect was not correlated with the severity of the lesions (28). Mallon et al. compared the quality of life of 111 acne patients with that of patients with other organic diseases using the SF-36 scale and found that emotional and psychological problems in acne patients are as serious as in asthma, epilepsy, diabetes, and arthritis patients (28). In a study evaluating the impact of acne on the quality of life using the SF-36 scale, 73 acne patients were compared with 48 control subjects. In this study, except for physical functioning, the acne and control groups demonstrated similarities in other parameters. Physical functioning scores were lower than in the control group. In the same study, no significant difference was detected for the correlations between the quality of life scores and increased severity of acne (17). However, in our study, in acne patients, vitality ($P < 0.05$), social functioning ($P < 0.05$), and emotional role difficulty ($P < 0.05$) scores of the SF-36 scale were significantly lower than in the control group. Compared with mild acne patients, in patients with severe acne physical role difficulty scores were significantly lower ($P < 0.05$). Comparatively lower vitality scores in acne patients relative to the healthy group can be explained by multidimensional features of physical appearance, adverse effects incurred on the psychological state with resultant feelings of fatigue, and exhaustion.

We can say that because of these aforementioned adverse factors, decreases in socialization can be observed due to the adverse impact of physical condition on the psychological state, and the emotional state of the patient also adversely affects daily activities.

With increasing clinical severity of acne, physical role limitations can develop in acne patients. According to the AQoL, patients with severe acne were rated with significantly higher scores in the following: feeling uneasy in the presence of others ($P < 0.05$); decrease in socialization ($P < 0.05$); difficulties within romantic relationships ($P < 0.05$); feeling rejected ($P < 0.05$); becoming an object of mockery ($P < 0.05$); and being rejected in a romantic relationship ($P < 0.05$). However, both groups still had higher scores than the lowest overall average score of the scale. According to the responses given to a survey conducted by Başak and Ergin, acne was found to make the individual feel embarrassed. Secondly, it complicated male/female relationships, and thirdly, the individual became more reluctant in participating in social activities (29). Contrary to our study, another survey obtained significantly different AQoL scores between patients with mild and moderate grades of acne. However, the same study, like ours, obtained higher scores in domains related to feeling embarrassed in the presence of others, having difficulty in being with other people, experiencing difficulties in establishing a relationship with his/her partner/friends, and feeling like an "outcast" because of his/her acne. When all the items of the AQoL scale (in particular socialization) were examined, patients with severe acne had significantly higher scores in the social phobia domain, which is characterized by anxiety induced by fear of being in places where people might stare at the patient because of his or her acne. All these findings might explain and justify our rationale of screening acne patients for the adverse effects of social phobia.

Acne vulgaris is a disease that can affect an individual's quality of life adversely and has the potential to result in significant psychological and psychiatric complications. In this study, we detected higher levels of depression and anxiety in patients with acne vulgaris and severe symptoms of social anxiety and social avoidance. We also observed exacerbations in the severity of acne and worsened emotional status of the patients in terms of some psychiatric parameters. Especially when acne vulgaris is severe, it should be considered as a disease that can potentially harm the patient's social and emotional functioning, and psychiatric evaluation and psychotherapeutic interventions, particularly aimed at social anxiety symptoms and social functioning, should be an important part of the treatment plan.

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