

An Update on the Presence of Psychiatric Comorbidities in Acne Patients, Part 1: Overview of Prevalence

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Acne vulgaris (AV) is a chronic inflammatory skin disease that affects millions of people. Psychologic disorders such as depression, anxiety, and body dysmorphic disorder (BDD) are common in patients with AV. This article in a 2-part series provides a review of the rates of general psychologic comorbidity, depression, anxiety, and BDD.
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Acne vulgaris (AV) is a chronic inflammatory skin disorder of the pilosebaceous unit. The disease primarily is characterized by the inappropriate keratinization of the follicular epithelium, which subsequently causes obstructive and inflammatory lesions. Hyperandrogenic states and the proliferation of *Propionibacterium acnes* also contribute to the pathogenesis. It is estimated that more than 90% of males and 80% of females experience acne by 21 years of age, with the greatest frequency of occurrence between the ages of 15 and 18 years.¹⁻³ Although clearance occurs mostly before 25 years of age, acne lesions can persist into middle age for both

sexes.³ It has been reported that 15% of all dermatologic visits are for AV and 5.25 million acne visits yearly take place in nondermatologic offices.⁴

Although it is well-accepted that AV results from the abnormal keratinization of the pilosebaceous unit, the causal pathway of this abnormality remains to be elucidated. Some researchers imply that psychosomatics may play a part.⁵⁻¹¹ Psychosomatics is the belief that psychic stimuli can produce a response in somatic structures via direct and indirect means. Cranial nerve innervations receive stimuli directly from the brain, an example of a direct means of psychosomatic influence. Alternatively, an indirect effect may be realized by mental states such as anxiety, depression, and stress that ultimately stimulate the sympathetic nervous system, causing notable changes in somatic structures.⁵⁻¹¹

Although this viewpoint is controversial, it is probable that dermatologic patients experience psychologic symptoms more commonly than healthy people without skin disease.⁸ In Great Britain, the prevalence of psychiatric morbidity has been estimated at 31% (N=6572)¹² and is noticeably higher in patients with dermatologic problems compared to the general population. The high prevalence of these psychologic comorbidities suggests a patient's psychology may play a role in the clinical course or even etiology of various dermatologic conditions. Basic science research has begun to study the link between psychologic disease and AV. Neuroimaging has demonstrated the presence of substance P receptors on sebaceous glands and documented increased production of sebum upon stimulation of these receptors. The number of these receptors is increased in the presence of AV compared to healthy skin.¹³ It has been speculated that stress could upregulate sebum production via substance P receptors, causing an AV flare.⁶

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This review discusses the relative rate of concurrence of psychiatric illnesses in patients with AV.

Background and Importance

Humphreys and Humphreys¹⁴ conducted a survey and reported that most dermatologists recognized the relationship between the psyche and skin and demonstrated the need for psychiatric services for their patients. Forty-nine percent of the dermatologists surveyed (N=341) claimed to refer patients to a psychiatrist.¹⁴ Also, dermatologists commonly think that psychiatric disorders frequently occur in their patients.¹⁵

As only a minority of individuals seek professional help for mental health reasons,¹⁶ the dermatologic consultation might be a rare opportunity to screen patients for psychiatric comorbidities. Kramer and Gerralda¹⁷ (N=136) found that 38% of teenagers aged 13 to 16 years under treatment by a general practitioner had a psychiatric disorder, though only 2% had presented with psychiatric symptoms. Acne was the most common presenting concern among these adolescents.¹⁷ The dermatologist may prove to be a central player in decreasing the growing number of suicides seen in young patients by effectively screening for psychiatric comorbidities and referring patients for psychiatric services.

Acne vulgaris most frequently presents in adolescents or young adults. This population also is at risk for suicide.¹⁰ In fact, there has been a large increase in suicide rates seen in adolescents and young adults in the last 30 years in the United States, Great Britain, Australia, and a number of other countries.¹⁸⁻²¹ The highest incidence of completed suicides has been seen in males and females with facial symptoms.^{22,23} Increasing evidence suggests that individuals prone to suicidal behavior may be characterized by poor self-esteem; poor coping mechanisms; and greater frequency of neurotic behavior, interpersonal conflict with friends, and difficulties at school.²⁴⁻³² By far the strongest correlate is the psychiatric state of the individual.^{30,33,34} Suicidal behavior often is the result of a series of life sequences that involve accumulative exposure to these multiple risk factors.³⁵ Acne patients are already a high-risk population because of their age, but they also demonstrate a higher frequency of the aforementioned risk factors for suicide.

Frequency of Psychologic Disorders in Patients With AV

The coexistence of psychologic disorders in patients with AV was first recognized by Sulzberger and Zaidens³⁶ in 1948. They asserted that AV causes more psychic trauma and more maladjustment between parents and children, more general insecurity and

feelings of inferiority, and greater sums of psychic assessment than any other disease. Since then, the bulk of studies have focused on screening for general psychiatric comorbidity or have specifically centered on determining the frequency of depression, anxiety, and body dysmorphic disorder (BDD) in patients with AV (Table).

Many psychiatric disorders can coexist. It would, therefore, be difficult to provide diagnostic criteria for every disorder in this review article. However, most of the studies analyzed the presence of major depressive disorder, generalized anxiety disorder, or BDD. According to the *Diagnostic and Statistical Manual of Mental Disorders* (Fourth Edition), major depressive disorder is defined as a severely depressed mood that persists for at least 2 weeks. Generalized anxiety disorder is characterized by worry for most days for at least 6 months, and individuals with BDD usually imagine deficits in body parts and have severely impaired emotions and basic daily functioning.⁵¹

General Psychiatric Comorbidity—Six investigations have been conducted to establish the frequency of general psychiatric comorbidity in acne patients.^{8,39,40,44,45,48} These studies measured psychiatric caseness. An individual with a high degree of psychiatric caseness is one who screens positively using survey instruments and is in need of further psychiatric assessment. The studies have reported frequencies of comorbidity ranging from 23% to 46% for outpatients (Table). These studies have utilized either the 12- or 30-item general health questionnaire. General health questionnaires are designed to detect current, minor, nonpsychotic psychiatric disorders in general practice and the community. Kilkenny et al⁴⁰ surveyed 2491 high school students but did not report results in frequencies. However, they did document a higher level of psychiatric symptoms in students with moderate acne.⁴⁰

Picardi et al⁴⁵ present the most convincing data in support of the high prevalence of psychiatric disorders in acne patients. They administered the 12-item general health questionnaire (GHQ-12) and the Skindex-29 instrument to 4286 dermatology patients in their outpatient clinic; 2579 questionnaires were analyzed. The Skindex-29 instrument is used to measure the health-related quality of life in dermatology patients. It measures social functioning and emotional as well as physical symptoms. It is scored on a 100-point scale, with a higher score indicative of greater effects on quality of life. This study showed a 31.8% prevalence of psychiatric comorbidity as identified by the GHQ-12 in acne patients. Of the 2579 participants, 26 separate dermatologic diagnoses were represented. More AV patients were affected with psychiatric illness than patients experiencing

Studies Describing Psychiatric Comorbidities in Acne Patients

Reference (Year)	Location	Study Population	Methods	Results
Medansky et al ³⁷ (1981)	United States	145 acne patients ≥ 15 y; patients recruited on initial outpatient visit; no controls	Self-evaluated and physician-graded AV severity; screened for base and inducible anxiety	15% of patients had above average base anxiety; 17% of patients had below average base anxiety; 10% of patients had above average inducible anxiety; 10% of patients had below average inducible anxiety
Hughes et al ⁸ (1983)	United Kingdom	196 outpatients and 40 inpatients studied with various dermatologic disorders; no controls	Screened for general psychiatric comorbidity; all positive screens further evaluated for depression and had a psychiatric interview	30% of outpatients and 60% of inpatients had a positive screen; 46% of acne patients had a positive screen
Gupta et al ³⁸ (1990)	United States	10 acne patients enrolled in clinical drug trial; patients attending outpatient clinic; no controls	Physician-graded severity; surveys distributed pretreatment and at 6 wk; screened for depression	3/10 patients with clinical depression; 7/10 had history of major depressive disorder
Gupta et al ³⁹ (1994)	United States	13 male patients with mild/moderate AV and self-excoriative behavior; patients attending outpatient clinic; no controls	Self-evaluation and physician-graded AV severity; screened for general psychiatric comorbidity	Depression significantly correlated with self-excoriation ($P = .02$); anxiety significantly correlated with self-excoriation ($P = .03$)
Kilkenny et al ⁴⁰ (1997)	Australia	2491 high school students completed survey from government, independent, and Catholic high schools across Australia; students were either in 7th, 9th, or 11th grade; no controls	Laptop computers distributed to schools with surveys; self-evaluation for AV severity; screened for general psychiatric comorbidity	Students with moderate acne had a higher level of psychiatric symptoms than those with mild AV; data reported in confidence intervals, not percentages

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(continued) Reference (Year)	Location	Study Population	Methods	Results
Gupta and Gupta ⁴¹ (1998)	Canada	72 acne patients were studied from merged data of several other large exploratory studies; patients were seen in both inpatient and outpatient settings; no controls	Self-evaluation of AV severity; screened for clinical depression	Patients with mild to moderate noncystic acne had the 2nd highest screening scores for depression, which were higher than patients with alopecia areata or atopic dermatitis, or outpatient psoriasis patients with <30% BSA involvement ($P < .05$)
Niemeier et al ⁴² (1998)	Germany	50 acne patients; patients attending outpatient clinic; control group consisted of 33 persons without skin disorders	Physician-graded severity; screened for depressive symptoms	Depression scores were similar to controls; acne patients were not considered to be at increased risk for depression on a whole
Kellett and Gawkrödger ⁴³ (1999)	United Kingdom	34 acne patients; patients attending outpatient clinic; no controls	Self-evaluation and physician-graded AV severity; screened for anxiety and depression	18% (6/34) of acne patients with clinically significant depression; 44% (15/34) of acne patients with clinically significant anxiety
Mallon et al ⁴⁴ (1999)	United Kingdom	111 acne patients ≥ 16 y; patients attending outpatient clinic; controls were patients with other dermatologic conditions	Surveys sent 2–3 wk prior to 1st visit; physician-graded severity; screened for general psychiatric comorbidity	41.0% of acne patients screened positive ($P = .04$)
Picardi et al ⁴⁵ (2000)	Italy	170 (6.6%) acne patients of a total of 2579 patients with various dermatologic conditions; patients attending outpatient clinic; no controls	Physician-graded severity; screened for general psychiatric comorbidity; Skindex-29 survey used to measure health-related quality of life	31.8% of acne patients with positive screen; severity of lesions not associated with increased psychiatric morbidity
Aktan et al ⁴⁶ (2000)	Turkey	615 acne patients (age range, 14–20 y); patients attending high school; sex-matched controls	Physician-graded severity; screened for depression and anxiety	13.3% of acne patients and 15.2% of controls with significant depression; 24.7% of acne patients and 25.3% of controls with significant anxiety

Reference (Year)	Location	Study Population	Methods	Results
Uzun et al ⁴⁷ (2003)	Turkey	159 subjects with mild AV; patients attending outpatient clinic; no controls	Physician-graded severity; BDD screening tool utilized; contained DSM-IV criteria for BDD; psychiatric interview administered to measure comorbidity	8.8% fulfilled criteria for BDD
Sampogna et al ⁴⁸ (2004)	Italy	2136 acne patients ≥ 18 y; patients attending outpatient clinic; no controls	Physician-graded severity; screened for general psychiatric comorbidity; Skindex-29 survey used to measure health-related quality of life	23% of acne patients with positive screen
Yazici et al ⁴⁹ (2004)	Turkey	61 acne patients; patients attending outpatient clinic; 38 control subjects without AV	Physician-graded severity; screened for depression and anxiety	29.5% (18/61) of acne patients with significant depression ($P=.011$); 26.2% (16/61) of acne patients with significant anxiety ($P=.001$)
Purvis et al ⁵ (2006)	United Kingdom	9567 students from New Zealand secondary schools; secondary study of data collected from a national secondary school youth health and well-being survey; no controls	Screened for depression and anxiety	14.1% of students screened positive for clinically relevant depressive symptoms; 4.8% of students screened positive for clinically relevant anxiety
Bowe et al ⁵⁰ (2007)	United States	128 acne patients with mild acne; patients attending outpatient clinic; no controls	Screened for the presence of BDD with DSM-IV	36.7% of patients with mild acne had positive screen for BDD; 14.1% of patients with nonexistent acne (who thought they were afflicted) had a positive screen for BDD

Abbreviations: AV, acne vulgaris; BSA, body surface area; BDD, body dysmorphic disorder; DSM-IV, *Diagnostic and Statistical Manual of Mental Disorders* (Fourth Edition).

many other dermatologic conditions, surpassed only by patients with viral infections (45.5%), alopecia (35%), and pruritus (33.3%). This study included a large population of respondents and used controls with other chronic dermatologic illnesses.⁴⁵ Mallon et al⁴⁴ surveyed 111 acne patients using the GHQ-12 and found that 41.0% had a positive screen for a potential psychiatric disorder ($P=.04$). Patients with other dermatologic disorders were used as controls.⁴⁴

Depression, Anxiety, and BDD—Another point of interest in the research pertains to psychological disorders that are more specific to AV. Many researchers have described a link between depression, anxiety, BDD, and acne (Table). Data from 8 studies suggest that 13.3% to 30% of acne patients screen positive for depression.^{5,8,38,41-43,46,49} The largest study conducted surveyed 9567 students from New Zealand secondary schools using the Reynolds adolescent depression scale.⁵ Approximately 14.1% of students screened positive for clinically relevant depressive symptoms. Of all the investigations, this percentage represented the lowest frequency reported.⁵ Furthermore, 3 of these investigations used patients with other dermatologic disorders as controls^{42,46,49}; one study favored an association with AV.⁴⁹ Gupta and Gupta⁴¹ found that patients with mild to moderate noncystic acne had the second highest screening rates for depression ($P<.05$). Yazici et al⁴⁹ came to a similar conclusion. Interestingly, in 2005 Riolo et al⁵² examined the depression prevalence by race ($N=8449$) and found the highest rate in white individuals at 10.4%; 7.5% of African Americans and 8.0% of Mexican Americans experienced depression. The data indicate that individuals with AV may be more likely to express comorbid depression than the general population.

Niemeier et al⁴² have refuted these results in their study of depression, arguing that acne patients do not demonstrate increased frequency of depression compared to healthy controls. Aktan et al⁴⁶ also reported no significant difference between acne patients and controls in their study of depression and anxiety.

Two uncontrolled studies show high rates of BDD in acne patients.^{47,50} Bowe et al⁵⁰ ($N=128$) reported that 36.7% of patients with mild AV had a positive screen for BDD, while Uzun et al⁴⁷ ($N=159$) claimed 8.8% of patients fulfilled criteria for BDD. Inquiries about BDD are difficult to undertake because of the requirements needed to make the diagnosis. Generally, there should be no somatic pathology present save for the psychological malady. In both studies, however, all patients had some form of mild AV.^{47,50} Research involving a randomized population in the United States has shown that the lifetime prevalence of BDD is 2.4% ($N=2048$), which is much lower than in AV patients.⁵³

Gupta et al³⁹ reported that both depression and anxiety significantly correlated with self-induced excoriation ($P=.02$ and $P=.03$). These data may be useful on a clinical level in identifying acne patients who are at higher risk for psychiatric comorbidity; self-excoriation may be an objective finding to help the physician pinpoint underlying psychiatric depression and anxiety.

In contrast, some studies suggest there is not an increased likelihood of anxiety in AV patients. First, the lifetime prevalence in the wider population of anxiety disorder is 28.8%,⁵⁴ while the range in AV patients is 4.8% to 44% (Table). Only one study reported a prevalence of anxiety in AV patients that was higher than the general lifetime prevalence (44% [15/34]).⁴³ Second, Aktan et al⁴⁶ concluded that there was no statistical significance between AV patients and controls with anxiety.

Conclusion

Taken together, these findings suggest that at minimum, a thorough clinician must at least consider the possibility of an underlying psychiatric component to their patient's dermatologic illness. This awareness would help to better recognize patient concerns and allow clinicians the opportunity to optimize treatment modalities as well as offer the best quality of care to their patients.

This article is the first of a 2-part series. The second part focusing on coexisting psychiatric illnesses and treatment of acne will appear in a future issue of Cutis®.

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