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The Mental Health Implications of Acne Vulgaris

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Aim of the Study:

This article aims to review the mental health impact of acne vulgaris, examining how acne affects psychological well-being, self-esteem, and social functioning. Additionally, it explores the effectiveness of integrating psychological support with dermatological treatments for improved outcomes.

Materials and Methods:

A comprehensive literature review was conducted using the PubMed, Google Scholar, and Medline databases. Keywords included 'acne vulgaris,' 'mental health,' 'self-esteem,' 'psychological distress,' and 'acne treatment outcomes.'

Results**and****Conclusions:**

Acne vulgaris can significantly impact mental health, leading to conditions such as anxiety, depression, and social withdrawal, particularly among adolescents and young adults. Integrating psychological interventions with conventional acne treatments shows promise in reducing both psychological distress and acne symptoms. However, further research is needed to determine optimal treatment combinations and to explore the long-term benefits of a holistic approach to acne care.

Abstract:

Acne vulgaris, a prevalent chronic inflammatory skin condition, affects approximately 9.4% of the global population, with implications that extend beyond physical appearance to significantly impact mental health. While acne primarily manifests through visible skin lesions, such as comedones, papules, and pustules, the condition's psychological toll can be profound. Many individuals with acne experience elevated levels of anxiety, depression, and reduced self-esteem, especially adolescents, for whom acne can disrupt self-identity formation. These mental health challenges are often exacerbated by the social stigma associated with visible skin conditions, leading to issues like social withdrawal, body image concerns, and, in severe cases, even suicidal thoughts.

Effectively managing acne requires a holistic approach that addresses both physical symptoms and psychological well-being. Dermatological treatments, including topical retinoids, benzoyl peroxide, and oral isotretinoin, are commonly used to control acne symptoms. Dietary modifications, such as reducing high-glycemic foods and dairy, and the use of probiotics, have shown promise as supportive measures. However, addressing the psychological component is equally critical; integrating psychological interventions, such as counseling, cognitive-behavioral therapy, and patient education, can help alleviate the mental strain associated with acne, improve adherence to treatment, and enhance quality of life.

Further research is essential to explore the long-term benefits of combined dermatological and psychological treatments and to develop personalized approaches that consider individual psychological profiles. A comprehensive treatment model that incorporates both physical and mental health support offers the potential for improved outcomes, fostering both dermatological recovery and mental resilience in individuals affected by acne vulgaris.

Keywords: acne vulgaris, psychological impact, mental health, anxiety, depression

1. Introduction

Acne vulgaris is estimated to affect around 9.4% of the global population [1]. Acne is a chronic inflammatory condition that impacts the pilosebaceous unit. Androgens stimulate an increase in sebum production, which, along with changes in keratinization, promotes inflammation. This environment enables *Propionibacterium acnes* to colonize hair follicles, particularly on the face, neck, chest, and back [2].

Acne vulgaris is a condition that can negatively impact an individual's quality of life [3]. The psychological impact of acne can be profound, often leading to depression, heightened anxiety, and diminished self-esteem. These effects may stem from the visible appearance of inflamed skin during active flare-ups or from lasting, disfiguring scars that acne can leave behind [4].

Understanding the psychological impact of acne vulgaris is essential, as this common skin condition can significantly affect mental health and overall quality of life. By examining the mental health implications of acne, we can better address the holistic needs of individuals with this condition, helping to improve both their dermatological and psychological outcomes.

2. Pathophysiology, Epidemiology, and Risk Factors of Acne Vulgaris

Around 20% of teenagers experience moderate to severe acne, with its severity often increasing alongside pubertal development. With puberty occurring earlier, acne is now emerging at younger ages. For many, acne remains an issue well into adulthood, affecting roughly 64% of individuals in their 20s and 43% in their 30s. Genetic factors play a significant role, as first-degree relatives share an approximately 80% likelihood of developing acne [5]. This condition is characterized by the development of non-inflammatory comedones, along with inflammatory lesions such as papules, pustules, nodules, and cysts [6]. Acne vulgaris is categorized by considering the patient's age, the morphology of lesions—whether comedonal, inflammatory, mixed, or nodulocystic—as well as the areas affected, such as the face, torso, or both. Severity is also taken into account, including factors like the extent of the condition, the presence of scars, post-inflammatory redness, or pigmentation changes [7].

Key mechanisms contributing to the development of acne include disrupted sebaceous gland function, which leads to excessive sebum production and alterations in its fatty acid composition. Additionally, hormonal dysregulation, interactions with neuropeptides, follicular hyperkeratinization, the induction of inflammation, and dysfunctions in both innate and adaptive immunity play a significant role in this process [8]. Acne has been linked to multiple hormones that regulate sebaceous gland activity, including androgens, estrogens, and progesterone. Other associated hormones include growth hormone, insulin, insulin-like growth factor-1 (IGF-1), corticotropin-releasing hormone (CRH), adrenocorticotrophic hormone (ACTH), as well as melanocortins and glucocorticoids [9]. When hormones like androgens stimulate sebaceous, keratinocyte, and ductal cells, they begin to proliferate. If these cells block the pilosebaceous duct, sebum and hair become trapped beneath, increasing pressure and limiting oxygen availability. This low-oxygen environment supports the growth of *Propionibacterium acnes*, while excess sebum provides fatty acids that fuel bacterial growth [10]. *Propionibacterium acnes* thrive in the lipid-rich sebum of the pilosebaceous unit, especially with increased sebum production. This bacterial growth triggers inflammation through complement activation and release of byproducts that attract neutrophils. Inflammatory lesions form when comedones rupture, releasing their contents into surrounding tissue. In severe cases, nearby cysts may merge to form draining sinuses, and inflammation can lead to lasting scars or hyperpigmentation even after acne resolves [11]. High insulin levels promote the growth of sebocytes, while cortisol boosts sebaceous gland activity. During stress, elevated cortisol levels lead to increased sebum production, often worsening acne lesions [12].

Evidence increasingly suggests that diet plays a role in acne development. High-glycemic foods, dairy products, chocolate, and fatty foods appear to promote acne, while fatty acids, fruits, and vegetables may offer protective benefits. Additionally, studies indicate that factors such as vitamin D deficiency, high doses of vitamins B6 and B12, and whey protein supplements could be linked to acne [13].

3. Psychological Impact of Acne Vulgaris

Studies have shown that individuals with acne experience a higher rate of primary hospital admissions for mental health disorders compared to those without acne. These admissions cover a range of conditions, including depression, schizophrenia, and disorders

related to alcohol use, developmental issues, impulse control, anxiety, adjustment, personality, substance use, and attention-deficit/hyperactivity disorder [14]. Acne typically presents with comedones as well as inflammatory papules and pustules. In more severe cases, larger lesions such as nodules and cysts can develop, often leading to scarring and profound mental strain [15]. The impact of acne extends beyond physical symptoms, often damaging self-esteem and disrupting the development of self-identity in adolescents. These effects are particularly pronounced in girls, who may be more vulnerable to the psychological consequences associated with acne [16]. Acne's psychological impact often operates in both directions: visible facial acne can trigger negative emotions, which may, in turn, worsen the condition. This intensification can result from increased self-consciousness about the blemishes or from behaviors like touching or picking at the skin, further exacerbating acne [17]. The effects of the disease can be more intense for female patients, often leading to greater emotional distress and increasing tendencies like skin picking. This behavior raises the risks of secondary infections, scarring, post-inflammatory hyperpigmentation, and recurring acne [18]. One study found that patients' psychological issues and career impacts were more closely linked to their self-perceived appearance than to clinically graded acne severity. This discrepancy indicates that acne's influence on daily life, mental health, and social activities is shaped more by patients' personal awareness of their skin condition than by objective clinical evaluations [19].

Depression was two to three times more prevalent in acne patients than in the general population. Approximately 65.2% of the acne patient population was female, with twice as many reported to have depression as males [20]. Studies report high anxiety rates in acne patients, with girls showing higher levels than boys. The social and psychological effects of acne—like social withdrawal, academic struggles, and body image issues—may contribute to both anxiety and depression in those affected [21]. Adolescents with acne show a higher incidence of suicide; however, despite some reported links between isotretinoin and suicidal thoughts, no definitive evidence supports this association [22]. Moreover, isotretinoin treatment does not seem to increase depressive or anxiety symptoms compared to topical treatments. Instead, effective acne management may help reduce these symptoms and improve quality of life [23].

4. Treatment

Acne treatments focus on targeting various underlying mechanisms of the condition, and combining multiple approaches often leads to the best outcomes. As patients respond differently, therapies may be modified based on their progress and how well they tolerate each treatment [24].

Retinoids applied topically are appropriate for treating acne regardless of severity and are also useful for maintenance. Antibiotics, both systemic and topical, should be limited to use alongside benzoyl peroxide and retinoids, with a maximum treatment duration of 12 weeks [25]. Monotherapy with topical or oral antibiotics is discouraged because of the global rise in bacterial resistance. In contrast, topical benzoyl peroxide is a broad-spectrum antibacterial agent, and no cases of bacterial resistance to it have been reported [26]. Given the microcomedo's central role in forming both inflammatory and non-inflammatory acne, topical retinoids are recommended as the primary treatment. For patients unresponsive to topical options, or when acne appears as nodular lesions or leaves scars, oral systemic treatment is typically advised. In these cases, isotretinoin is often the preferred retinoid for effective systemic management [27]. For mild-to-moderate acne, topical and physical treatments like chemical peels and phototherapy proved more effective than placebo. Combination treatments—such as benzoyl peroxide with clindamycin, retinoids, or macrolides—were found to be the most effective. For moderate-to-severe acne, the top-ranked treatments included oral isotretinoin, oral tetracyclines combined with topicals (such as azelaic acid, retinoids, or benzoyl peroxide), and combinations of topicals like retinoids with benzoyl peroxide or clindamycin [28]. Salicylic acid, known for its antibacterial properties, is commonly used as an initial treatment for mild acne due to its safety profile. However, it is generally considered less effective compared to topical retinoids [29]. Effective acne treatment requires both clearing existing lesions and preventing future flare-ups. Typically, two to three months of consistent treatment are necessary to evaluate its effectiveness [30].

Dietary management is an important addition to acne treatment. Evidence suggests that a Western diet, high in hyperglycemic carbs and dairy, drives acne development. Reducing these foods may be beneficial for managing acne [30]. Studies have found that taking probiotics orally can serve as a supportive therapy alongside conventional treatments for mild-to-moderate acne vulgaris [31].

A comprehensive approach that includes both effective acne treatment and psychological support is essential in managing acne and promoting mental well-being, and is strongly advised [32]. Adding psychological interventions to acne vulgaris treatment can improve both physical symptoms and mental well-being. The success of these interventions may depend on factors like acne type, the patient's psychological traits (e.g., self-criticism), and treatment adherence [33].

In one study, following a Mediterranean diet was found to be particularly beneficial for women with moderate-to-severe acne. Interestingly, individuals with acne might benefit from reducing their wine intake. Additionally, women who closely adhered to a Mediterranean diet were more likely to follow their prescribed acne treatments, which led to better management of the condition [34].

5. Conclusions

Acne vulgaris is not merely a physical skin condition; it is also a substantial source of psychological distress for many affected individuals. Due to its visible nature and potential to cause lasting scars, acne can profoundly impact self-esteem and contribute to psychological challenges, including anxiety, depression, and social withdrawal. This emotional toll is particularly pronounced in adolescents, who are at a vulnerable stage in developing their self-identity and social confidence. Addressing acne effectively, therefore, requires a comprehensive, holistic approach that considers the psychological dimensions alongside physical symptoms.

Integrating psychological support into acne treatment has demonstrated encouraging results in enhancing both mental well-being and adherence to dermatological care. Psychological interventions can significantly boost self-esteem and help reduce behaviors that may exacerbate acne, including skin picking or excessive focus on perceived flaws. By alleviating the emotional burden of acne, these strategies encourage patients to adhere more consistently to their dermatological treatment plans, ultimately leading to more favorable therapeutic outcomes.

Additionally, there is an increasing body of evidence supporting a treatment approach that combines standard medical therapies with patient education on lifestyle factors like stress management and dietary adjustments. These elements can influence the severity of acne, and educating patients about them as part of a well-rounded care plan empowers them with practical

tools to manage their condition more proactively. Such a comprehensive care plan, encompassing medical, psychological, and lifestyle aspects, can significantly improve both the physical and mental quality of life for individuals dealing with acne.

Despite these advancements, further research is essential to refine holistic treatment models and identify the most effective psychological interventions specifically tailored to the needs of acne patients. Deepening our understanding of the interplay between physical treatments and psychological support will enable healthcare providers to develop highly personalized care plans, addressing both the dermatological and emotional aspects of acne. Ultimately, this comprehensive approach can lead to better overall outcomes, fostering enhanced skin health and improved quality of life for individuals affected by acne vulgaris.

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