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DISCOVERY SCIENTIFIC SOCIETY

Psychological Impact of Acne in Adults and Adolescents - Narrative Review

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ABSTRACT

Background: Acne vulgaris is one of the most severe and widespread skin conditions. It affects the skin yet causes substantial psychological effects, which primarily affect people in their adolescent and young adult years across the world. The severity of skin symptoms does not always determine the intensity of psychological impact that causes anxiety, depression, and low self-esteem. Aim: This narrative review aims to establish the relationship between acne vulgaris and mental health, investigate treatment obstacles, and provide care methods. Materials and methods: Scientific articles were gathered using databases such as Scopus, PubMed, and Google Scholar. Clinical trials, meta-analyses, systematic reviews, and observational studies were used to assess the psychological impact of acne on adolescents and adults. Results: Acne shows a direct relationship with mental health conditions, including depression and suicidal thoughts, regardless of the disease severity. Stigmatization leads to poor academic and professional performance, as well as the deterioration of social relationships. Patients will find it hard to comply with their prescribed treatment plans due to the combination of unattainable treatment goals and adverse effects. The safety profile of isotretinoin has been a matter of concern despite its use as a first-line therapy. Psychological treatments improve emotional health and the effectiveness of treatment. Conclusions: Acne is a condition that affects human skin, producing enduring psychological effects. Dermatological care should include both psychological support and screening procedures. Physicians need to address both physical and emotional symptoms to provide a holistic approach.

Keywords: acne vulgaris, mental health, depression, anxiety

1. INTRODUCTION

Skin is the largest organ of the human body, and its appearance is a factor that affects how patients perceive themselves, in addition to serving as a protective barrier. Besides its biological purpose, the skin also holds high symbolic and social value: it is the body's most external organ and frequently serves as a first indicator of one's rank, beauty, and wellness within social relationships. The internal and

external conditions of our body are in dialogue with each other via the activity of the skin. The skin serves as our communication channel, as it relates external environmental factors to what is happening internally. People tend to express their emotions through skin-related physical reactions, because worry leads to skin picking, anxiety causes sweating, and shame produces blushing. Psychosomatic responses highlight the interconnection between psychological and dermatological well-being, underscoring the need for cross-specialty therapy techniques. Acne creates emotional and psychological distress for patients, which leads to higher depression rates and anxiety levels (Gupta et al., 1998). Acne has also been associated with social impairment, low quality of life, and low body image. All these tend to influence learning, relationships, and career goals.

The psychological effect of these conditions is worse at the adolescent level since the latter is a vulnerable development period that creates high social and emotional impact from distress. Adolescents are especially susceptible to peer judgment and social benchmarking and, therefore, more likely to generate low self-esteem and maladaptive coping strategies when afflicted by visible dermatological conditions. These conditions do not create physical disabilities, but they produce substantial psychosocial effects. Such side effects, although non-life-threatening, could have lasting effects on one's mental state, self-esteem, and overall well-being unless addressed appropriately. The emphasis of the current review is a summary of the available literature on self-esteem among acne patients, in the hope that we may better comprehend the psycho-social issues they face.

This report examines what we currently know, highlights areas where further information is needed, proposes integrating dermatological and psychological care, and offers ideas for enhancing patient care, particularly in addressing the needs of individuals with complex health issues.

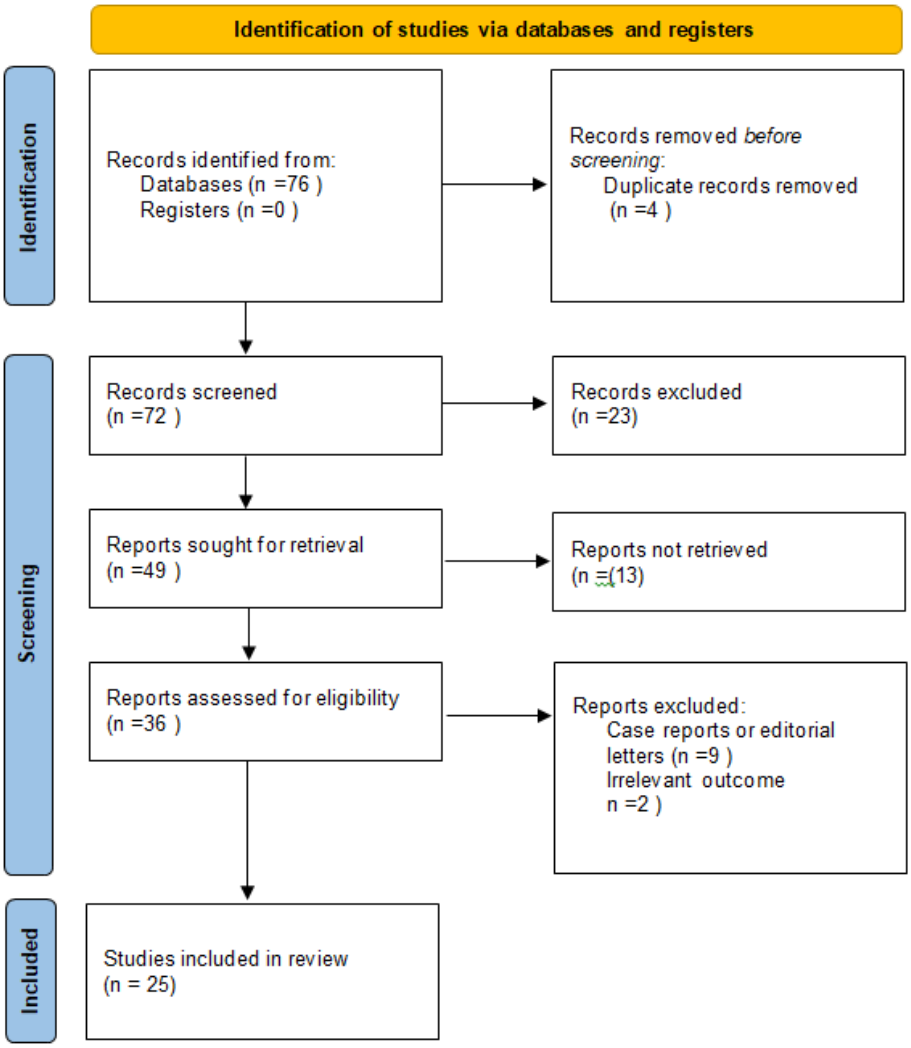

Figure 1. PRISMA flow chart

2. REVIEW METHODS

The narrative review was conducted via systematic searches of PubMed and Google Scholar with the following search terms: acne vulgaris, acne, adolescent acne or adult acne together with etiology, treatment, mental health, mental disorders, quality of life. The databases utilized in a literature review were from January 1978 to December 2024. The study included randomized controlled trials, observational studies, meta-analyses, systematic reviews, authoritative clinical guidelines, and clinical and preclinical studies that investigated the relationship between acne or scars and their negative effects on mental health. The review presents an extensive analysis of existing research that demonstrates the relationship between acne vulgaris and mental health effects.

The review presents a combination of epidemiologic, experimental, and clinical studies to examine the influence of cutaneous inflammation, hormonal changes, and social stigma on self-esteem and anxiety and depression in patients with acne. The review examines dermatologic and psychological strategies aimed at promoting comprehensive, individualized care. We excluded non-English publications, abstracts only with no full text available or those published as comments, editorials, letters or case reports. Research on how acne affects people's minds including studies that utilize skin doctor reports with shared outcomes, made the cut. The researchers followed the PRISMA guidelines throughout the screening process of the collected articles. In total, the review included 25 studies (Figure 1).

3. RESULTS & DISCUSSION

Pathophysiology of Acne vulgaris

Acne vulgaris (AV) is a widespread condition, affecting roughly 1 in 10 people. Chronic inflammatory processes that involve the hair follicles and the sebaceous glands of the pilosebaceous unit are touched on. Formation of acne is caused by three key factors: sebum proliferation, qualitative alterations in sebum, and proliferation of Propionibacterium acnes in the pilosebaceous unit. All these effects alter the local ambience of the skin. Recent research has focused on better understanding the drivers of acne, including hormonal and neuropetropin signaling, sebaceous gland activity, changes in the cutaneous microbiome, and the activation of the adaptive and innate immune systems (Kurokawa et al., 2009). Pubertal dysseborrhoea marks the initial stage of acne because it emerges from hormonal and genetic modifications that affect sebum production. Acne severity increases with the use of comedogenic products as well as harsh cleansers or drugs, which create conditions that make skin more susceptible to inflammation. Propionibacterium acnes grows uncontrollably due to barrier disruption and microbiome imbalance, which leads to PAR-, TLR-, and TNF-α-mediated innate immune cascades (IFN-γ, IL-1/8/12, MMPs) that result in follicular hyperkeratinization (Dréno et al., 2017).

Clinical spectrum of acne

Acne is classified based on the nature of the lesions, which may be comedonal, inflammatory, nodulocystic, or mixed lesions with different degrees of severity. Acne lesions are most common on the face, but also on the chest and the back. Post-inflammatory dyspigmentation and keloids occur frequently among patients with darker skin tones and together with scarring represent common manifestations. Acne most commonly affects teenagers, but it can also develop in people of all ages (Bhate and Williams, 2013). The medical term "adolescent acne" specifically describes cases that start between the ages of 10 and 19. Research indicates that new acne cases occur in approximately 9.3% of people after their mid-twenties. The medical community calls such delayed-onset disease "post-adolescent" or "adult acne." Adult acne primarily affects female patients and shows more inflammatory characteristics than adolescent acne cases. The disorder primarily affects the cheeks and lower part of the face. The onset of adolescent acne is characterized by the formation of comedones that will progress to other types of inflammatory lesions, including mild papules and severe nodulocystic lesions.

Epidemiology

During adolescence, acne is more likely to be severe in boys; after the age of twenty, its occurrence is more likely to increase in females. Although some studies suggest that acne is more prevalent in females, a recent systematic review shows that the evidence is inconclusive (Heng and Chew, 2020). A cross-sectional survey revealed that 27.9 percent of boys and 20.8 percent of girls had acne at the adolescent age (Daniel et al., 2000). The condition continues into adulthood because studies show that 60% of women in their twenties and 26% of women between 40 and 49 years old experience acne. Adult females develop acne through two distinct patterns: persistent acne, which begins during adolescence, and late-onset acne, which appears for the first time during adulthood. Other

research has found that women over 25 account for approximately one-third of all dermatology visits for acne treatment in the United States (Yentzer et al., 2010).

Current treatments of AV

The first step for managing AV requires patients to receive an evaluation from a clinical professional. The majority of people with acne do not seek dermatological consultation because only 5% to 28.3% of patients visit a dermatologist (Vilar and Santos, 2015). The treatment options for acne include topical and systemic medications, as well as light-based equipment and procedural interventions. Treatment selection depends on the severity and the type of lesion. Clinical assessments need to take into account patient age, skin type and prior therapy outcomes. Patients following acne treatment protocols often exhibit poor adherence when using topical medications. The primary reasons for this include adverse effects, as well as younger age and forgetfulness. Most people with acne believe their condition will disappear naturally after puberty or other triggering factors. Research indicates that patients fail to understand acne needs continuous management because they seek complete healing from their treatments, which leads to poor treatment adherence and initiation (Ryskina et al., 2018). Patients who benefit from treatment experience better improvements in self-esteem and quality of life, and anxiety reduction when compared to those who do not see treatment effectiveness. Research shows this relationship exists in both adolescent and adult populations (Uslu et al., 2008). Patients were also more content with the outcomes of medical treatment than with non-medical approaches to treatment. This chapter evaluates the existing methods of therapeutic management of acne in terms of the mechanism of work, clinical effectiveness, and safety profile.

Hormonal Therapies

Hormonal acne therapy targets androgens, which stimulate sebum production. Ovarian androgen production is suppressed by combined oral contraceptives (COCs). COCs work best among women who have flares in their menstrual periods or polycystic ovary syndrome (PCOS). Six months later, their effectiveness is equal to that of systemic antibiotics (Koo et al., 2014). Progestin-only pills (POPs), in contrast, lack supporting evidence in acne treatment. Hormonal therapies are contraindicated in patients with thromboembolic disorders, migraine with aura, or those who smoke and are over the age of 35 (Zaenglein et al., 2016). The aldosterone receptor antagonist spironolactone works to decrease both testosterone and DHT levels through its anti-androgenic mechanism. The medication shows good tolerance when used as a standalone treatment or in combination with COCs (Grandhi and Alikhan, 2017). The medication causes menstrual irregularities, breast tenderness, and hyperkalemia in patients with renal impairment and potential teratogenic effects. The FDA-approved topical androgen receptor antagonist clascoterone blocks dihydrotestosterone, thereby decreasing sebum production and the levels of inflammatory cytokines. The clinical trials demonstrate strong effectiveness and good tolerance of the medication, with local skin irritation representing the primary adverse effect.

Retinoids

Retinoids reduce sebum and inhibit keratinization. Common side effects include local irritation and photosensitivity. The FDA has designated Isotretinoin as the only oral retinoid medication for treating severe or resistant cases of acne. Retinoids target key biological pathways of acne-causing pathogens, leading to longer remission periods (Xia et al., 2022).

Antibiotics

The mechanism of action of topical antibiotics is to decrease bacterial proliferation and inflammation. The most widely used include clindamycin, erythromycin, and dapsone. Dapsone and topical minocycline are most suitable for individuals with sensitive skin (Piette et al., 2008). Acne treatment primarily depends on oral antibiotics, with tetracyclines (doxycycline, minocycline, sarecycline) being the preferred option for patients. Other classes include penicillins, sulfonamides, and macrolides. The use of oral antibiotics leads to gastrointestinal problems as well as photosensitivity and teratogenic effects in patients taking tetracyclines.

Procedural Therapies

Various laser systems laser platforms were investigated for acne treatment potential. Select studies demonstrate that photodynamic therapy (PDT) effectively targets pilosebaceous units and decreases Cutibacterium acnes levels. LED light therapies have shown effects in treating inflammatory acne. This therapy requires multiple sessions, in which patients may experience pain, redness, and skin discoloration. The treatment of acne and scarring involves chemical peels, which vary in depth, ranging from superficial to medium.

Fractional radiofrequency micro-needling can be used in the treatment of active acne and scarring (Lee et al., 2012). Kim et al., (2022) note that the use of Isotretinoin and laser therapy is more effective than either of those two procedures. It becomes possible to micro-administer retinoids and salicylic acid directly into the skin, which improves scar treatment.

Emotional repercussions of acne

Studies report higher rates of anxiety, depression, and even suicidal thoughts in acne sufferers. In one cohort of 34 individuals with severe, chronic acne, 44 % met criteria for anxiety and 18 % for depression on the Hospital Anxiety and Depression (HAD) scale (Kellett and Gawkrodger, 1999), yielding scores that lay midway between those of psychiatric patients and those with general medical conditions. Among seventy-two adolescents and young adults with mild-to-moderate, non-cystic acne, 5.6 % acknowledged active suicidal thoughts. Mean scores on the Carroll Rating Scale for Depression exceeded the threshold for clinical depression; only individuals with severe psoriasis scored worse (Gupta and Gupta, 1998). The Carroll Rating Scale for Depression is a well-validated, self-administered tool for assessing depressive symptoms. In a more extensive study, they found subjects with acne through referral letters to the Dermatology Department at Churchill Hospital in Oxford, England (Klassen et al., 2000).

The research included 130 participants aged 16 and above who completed a self-administered questionnaire before their dermatology appointment. The surveys used two assessment tools (EuroQol and the Short Form-36). The EuroQol consists of five scales addressing self-care, usual activities, mobility, pain or discomfort, and anxiety or depression. Among the 110 respondents with acne, 52.8% reported moderate to severe levels of anxiety or depression, with 4% indicating severe problems. The control population of 20-39 years old showed only 15.5% of participants with moderate or severe anxiety or depression. Within the acne cohort, no significant associations emerged between anxiety/depression and variables such as age, sex, duration of symptoms, or clinical severity of acne. The Short Form 36, a 36-item instrument that assesses eight health domains and yields both physical and mental component summaries, revealed that the mental-health scores of this same group were poorer than those recorded for six other chronic diseases in an age- and sex-matched general population (Mallon et al., 1999). Acne research shows that it raises the chance of developing major depression and anxiety, and sometimes leads to suicidal thoughts, which requires mental health screening and support during dermatological treatment.

Stigmatization and Sociological Impacts

Acne is not a threat to life or physical health, but it causes a significant psychological burden, which affects the daily activities of patients and their quality of life and self-concept. The psychological impact of acne is as debilitating as such chronic illnesses as asthma, diabetes, and epilepsy (Shuster et al., 1978). As modern norms associate clear skin with beauty and health, the perceived stigma in AV appears to be increasing, extending into educational and professional arenas. The psychological impact of AV persists into adulthood. Studies show that people with AV have higher unemployment rates than those without the condition. This impact is similar to that of other dermatoses with documented quality-of-life impairment (Kamangar and Shinkai, 2012) and supports classifying AV as a chronic disease. Nevertheless, both the public and many healthcare professionals still see it primarily as a self-limiting teenage problem.

Acne Digital Context

Intensive engagement with image-centric social media fosters a climate in which acne-affected adolescents and young adults monitor their appearance through an almost continuous “digital mirror.” A 2024 Chinese study found that heavier exposure to appearance-focused posts and frequent selfie activity were associated with significantly higher appearance anxiety (Zhang and Zhou, 2024). At the same time, beauty-enhancing filters on social media such as Instagram and TikTok have helped normalise an edited visage that is smoother, slimmer, and pore-free, prompting a rising demand for cosmetic interventions to “match” one’s filtered self. The digital environment also amplifies peer aggression: appearance-related cyberbullying has emerged as the most common form of online harassment among adolescent girls.

A 2024 Australian survey of 336 females aged 14-19 revealed that nearly all participants had experienced cyberbullying and two-thirds of them received insults about their appearance; such victimization strongly linked to body shame and eating disorder symptoms and an 81% expressed desire for cosmetic surgery (Prince et al., 2024) These findings show how selfies and filters and cyberbullying create a feedback loop that intensifies dysmorphic concerns especially for people who already have visible skin conditions. Acne care effectiveness demands clinicians to ask patients about their social media usage while teaching them about digital

image manipulation and referring them to psychological support when necessary to address the combined risk of anxiety and depression and body dysmorphic disorder.

Supporting Patients with Acne

AV represents a dermatological condition that develops into a persistent visible disorder that causes emotional distress and damages self-esteem and social functioning. Acne creates both physical and psychological challenges for numerous patients who are primarily adolescents and young adults during their identity development years. The clinical environment fails to recognize the shame and social withdrawal that patients experience. Providing reliable information to patients and their families can decrease self-blame and promote effective care. The implementation of structured interventions through therapy and counseling is proven to be successful in reducing anxiety and depression. The development and implementation of specific psychological screening tools will enable clinicians to identify patients who require emotional support.

Navigating Retinoid Risks

Isotretinoin, the previously mentioned oral medication used to treat acne, may be the best solution for many patients. However, there is another side to this drug; while effective, it may also pose an additional psychological burden on patients who are already at increased risk for mental health disorders. In 1983, Hazen et al. conducted a review to summarize all available data on the psychiatric side effects of Isotretinoin treatment. It deals with adverse drug event reports, prospective surveys, and retrospective case-control studies. All publications were reviewed and compiled as evidence of psychiatric side effects associated with the use of Isotretinoin, based on case reports, case series, adverse event reporting systems, prospective surveys, and retrospective case-control studies (Kontaxakis et al., 2009).

The review also discussed the neurobiology of retinoids and proposed biological mechanisms that might contribute to psychiatric symptoms. The relationship between Isotretinoin and depression remains unclear, as no definitive proof exists. Severe acne represents a major risk factor for depression and suicidal thoughts, so clinicians need to provide treatment for both conditions. The medication clears acne and improves psychological measures as a result. Since stress can worsen acne through neurochemical pathways, breaking this cycle may be beneficial (Kellett et al., 1999).

Cognitive Behavioral Therapy

CBT improves the quality of life (QoL) for patients with psoriasis, atopic dermatitis, acne, vitiligo, and alopecia. Acne excoriee is a skin-picking condition in which the affected person picks at small acne spots, usually leaving the sites open, crusty, and prone to scarring. The results of a 32-adult acne excoriee study revealed that, compared to standard dermatologic care, the CBT added to this treatment produced greater decreases in skin-picking, as well as reductions in lesion and anxiety/depression scale scores (Revankar et al., 2022). Dermatologists should develop a psychodermatological approach that incorporates routine psychological assessments and enhances access to mental health services.

Acne research shows that the condition has a significant psychological effect, which worsens with time. People with visible lesions experience decreased self-confidence and increased social self-consciousness, and elevated emotional distress according to research (Matsuoka et al., 2006). The harmful effects become more severe as clinical severity increases because more extensive or inflammatory eruptions lead to greater declines in self-image and more significant gains in shame, anxiety, and depressive symptomatology (Magin et al., 2006). The burden of acne becomes more severe because of perceived stigma, which leads people to avoid social interactions and academic and work environments, thus increasing the effects of acne beyond skin appearance. The results of the reported research are presented in Table 1.

Table 1. Psychological impact of acne as reported in the literature.

Aspect	Reference Study	Key Findings	Notes
Emotional repercussions	Kellett et al., 1999; Gupta et al., 1998; Klassen et al., 2000; Mallon et al., 1999	High rates of anxiety (44%), depression (18%), suicidal ideation (5–6%); QoL worse than in other chronic diseases	Validated psychological assessment tools applied; findings support the thesis

Stigmatization and social impact	Shuster et al., 1978; Kamangar et al., 2012	Comparable burden to asthma, diabetes, and epilepsy; AV is linked with unemployment and long-term stigma	Supports the classification of AV as a chronic disease
Digital context	Zhang and Zhou, 2024; Prince et al., 2024	Increased anxiety, body shame, cyberbullying	Emphasizes effect of social media on mental health in case of AV
Psychological interventions in AV	Revankar et al., 2022	Patient's education reduces self-blame, improves adherence and self-care, reduces skin-picking, anxiety, and depression	Psychodermatological approach suggested; advocates for holistic care style

4. CONCLUSION

Acne vulgaris is a functional skin disease, yet it is a long-standing, relapsing biopsychosocial disorder that affects the appearance and development of personal identity and mental health. The literature reports depression, anxiety, and withdrawal in social settings as a consequence of scarring. Acne in teenagers and adults needs to shift from a treatment-based approach to an interdisciplinary, multidisciplinary system. The strategy will convert current psychodermatology literature into practical health improvements for patients, creating a world where the smoothness of skin no longer signifies worth as a human.

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Conflict of interest

The authors declare that there is no conflict of interest.

Data and materials availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

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