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IMPACT OF ACNE VULGARIS ON QUALITY OF LIFE IN YOUNG ADULTS: PSYCHOLOGICAL, SOCIAL, AND FUNCTIONAL PERSPECTIVES

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Abstract

Acne vulgaris is a common inflammatory skin condition that frequently persists from adolescence into early adulthood. Its effects may extend beyond visible skin lesions, particularly during a stage of life when personal appearance, social relationships, education, and career development are important. This narrative review examines the impact of acne on health-related quality of life (HRQoL), with particular attention to young adults aged 18–25 years. Evidence from adolescent and older-adult populations is also considered where studies focusing specifically on this age group are limited. Findings from observational studies and meta-analyses suggest that acne is associated with depressive and anxiety symptoms, reduced self-esteem, dissatisfaction with body image, and appearance-related distress. However, the available evidence does not establish a direct causal relationship, and the influence of confounding factors remains difficult to determine. Social difficulties, including withdrawal, perceived stigma, and challenges in intimate relationships, have also been reported. Evidence concerning academic performance and occupational functioning is comparatively limited and relies largely on self-reported outcomes. Importantly, the degree of quality-of-life impairment does not always correspond to clinical acne severity. Visible facial lesions, scarring, and post-inflammatory hyperpigmentation may contribute substantially to psychological distress, including in individuals with relatively mild disease. Successful acne treatment is generally associated with improvements in HRQoL, although clinical trials do not consistently report patient-reported outcomes. Recent meta-analyses have also not supported an overall increase in psychiatric risk associated with oral isotretinoin, although appropriate clinical monitoring remains important. Commonly used assessment instruments, including the Dermatology Life Quality Index (DLQI), Cardiff Acne Disability Index (CADI), and Acne Quality of Life Questionnaire (Acne-QoL), differ in their content and ability to detect changes in patients' experiences. This review highlights the value of an integrated, patient-centered approach that combines clinical severity assessment, HRQoL measurement, brief psychological screening, individualized treatment, and follow-up. Further research is needed, particularly longitudinal studies involving young adults, gender-diverse populations, and individuals with skin of colour.

Keywords: Acne vulgaris, Quality of life, Young adults, Psychological distress, Body image, Psychodermatology.

Introduction

Acne vulgaris is a chronic inflammatory disease of the pilosebaceous unit. Global burden analyses consistently place it among the most prevalent skin conditions, and its high prevalence, rather than its mortality, accounts for most of its public health weight (1). Because it is common, visible, and often persistent, acne has traditionally been regarded as a minor or self-limiting condition of puberty, a view that sits uneasily with accumulating evidence that it can impair emotional well-being, social functioning, and self-perception (2). Young adults aged 18–25 years occupy a distinctive position. The concept of emerging adulthood describes this period as one of identity exploration, instability, and heightened self-focus, during which education, partnerships, and employment are negotiated. It also coincides with the age at which many common mental disorders first manifest (3). Acne that persists into, or begins in, this window may therefore interact with developmental vulnerabilities that are less prominent in younger adolescents or in older adults. Early work established that acne carries disability comparable in several domains to that reported in chronic medical conditions such as asthma, epilepsy, and diabetes, and a more recent meta-analysis has confirmed associations with depression and anxiety (4). Dermatology-wide surveys also show that psychological burden is a recurrent feature of skin disease. The literature is nonetheless uneven. Most quality-of-life studies enroll adolescents or mixed-age clinic populations, and few report results stratified for the 18–25 age bands. Findings on severity, sex, and treatment effect are heterogeneous, partly because studies use different instruments and recall periods (5). This review therefore aims to (i) summarizes the clinical and biological background of acne relevant to patient experience; (ii) appraise the instruments used to measure acne-related HRQoL, (iii) synthesize evidence on psychological, social, academic, occupational, and functional consequences; (iv) examine the factors that modify impairment; (v) consider how treatment influences HRQoL and (vi) outline clinical implications and research gaps. Throughout, we distinguish association from causation and flag the age group to which each body of evidence applies (5). This is a narrative, not a systematic, review. The suggested search strategy (acne terms combined with quality-of-life instruments, young adult or adolescent terms, and psychological or social outcomes) defines the intended scope; however, the evidence base here was assembled from the drafter's knowledge of landmark and recent publications rather than from a documented database search. Selection bias toward well-known studies is therefore likely, and the review should be read as a critical synthesis, not an exhaustive census.

2. Epidemiology and Prevalence of Acne Vulgaris in Young Adults

In global burden estimates, acne ranked among the most prevalent conditions worldwide, with point prevalence in the order of 9% in the Global Burden of Disease 2010 analysis. Subsequent skin-disease-specific updates continued to list acne among the leading contributors to non-fatal skin disease burden (6). Earlier epidemiological reviews described prevalence approaching universality in adolescence when mild lesions are counted, with substantial variation across regions and methods (7). A later systematic review emphasized that reported figures depend heavily on case definition (clinician examination versus self-report), sampling frame, and the severity threshold applied. Prevalence does not fall to zero at the end of adolescence. In a questionnaire-based US survey, acne was reported by a substantial proportion of adults, with the highest rates among women in their twenties and a gradual decline thereafter (8). Population data on women across the life span point in the same direction, and clinic-based series comparing adult and adolescent acne suggest that adult acne is more often inflammatory and more frequently seen in women. In community-based studies of high-school pupils, acne prevalence and

severity varied with pubertal stage, sex, and family history. For the 18–25 groups specifically, the epidemiological evidence is thinner than for either adolescents or older adults, and much of it derives from university or clinic samples that are unlikely to be representative (9).

Ethnic and phenotypic variation matters for quality-of-life research. Acne in people with skin of color is frequently complicated by post-inflammatory hyperpigmentation (PIH), which may be the dominant concern even when inflammatory activity is modest. Comparative work in adult women has reported racial and ethnic differences in clinical features, perceptions, and psychosocial impact. Because trial and quality-of-life datasets historically over-represent lighter skin phototypes, generalizations about patient experience should be made cautiously (10).

3. Pathophysiology and Clinical Characteristics of Acne Vulgaris

The pathophysiology of acne is multifactorial and is summarised in Figure-1. Contemporary accounts emphasise four interacting processes: increased and altered sebum production, abnormal follicular keratinisation, colonisation and altered behaviour of Cutibacterium acnes, and innate and adaptive inflammation, with inflammatory signalling now considered to be present from the earliest lesion stages rather than only after comedone formation (11).

3.1 Sebum production

Androgen-driven sebaceous gland activity increases at puberty and is a prerequisite for acne. Lipid composition, not only quantity, appears relevant: oxidised squalene and altered fatty-acid profiles have been proposed to contribute to comedogenesis and inflammation. Insulin and insulin-like growth factor-1 signalling have been proposed as additional modulators of sebocyte activity, providing a mechanistic hypothesis for observed dietary associations; this link is plausible but remains an emerging rather than established explanation (12).

3.2 Follicular hyperkeratinisation

Abnormal keratinocyte proliferation and cohesion within the infundibulum produce the microcomedone, the precursor lesion. Cytokine signalling, including interleukin-1 activity, and altered lipid milieu have been implicated in this process (13).

3.3 Role of Cutibacterium acnes

The role of C. acnes is better described as modulation than simple infection, since the organism is also part of normal skin flora. Strain-level studies of the skin microbiome have found that particular phylotypes are enriched in acne while others predominate in healthy skin, suggesting that diversity and strain virulence rather than bacterial load alone may matter. This is relevant clinically because it helps explain why antibiotics act partly through anti-inflammatory effects and why resistance is a concern (14).

3.4 Inflammatory mechanisms

C. acnes can activate Toll-like receptor 2 on monocytes and keratinocytes, triggering pro-inflammatory cytokine release. Subsequent recruitment of neutrophils and lymphocytes, together with follicular rupture, produces papules, pustules, and nodules (15).

3.5 Hormonal influences

Androgens are the principal hormonal driver, acting on sebaceous glands. Hormonal factors are most clinically evident in adult women, in whom perimenstrual flares, features of hyperandrogenism, and a jawline distribution are described, and where hormonal therapies may be considered (16). Careful assessment for endocrine disorders is advised when acne is severe, abrupt in onset, or accompanied by menstrual irregularity or hirsutism (17).

3.6 Clinical manifestations and severity classification

Acne vulgaris presents with a range of lesions, including open and closed comedones, papules, pustules, and, in more advanced cases, nodules (18). These lesions commonly affect the face and may also involve the chest and back. Assessing disease severity remains challenging because dermatological studies do not consistently use the same grading criteria. Earlier classification approaches relied mainly on lesion counts, whereas subsequent consensus-based recommendations have emphasized the importance of considering lesion morphology, number, distribution, and extent of involvement (19). Scoring systems such as the Global Evaluation Acne (GEA) scale offer a practical means of assessing severity in clinical settings. Nevertheless, differences between grading methods can affect comparisons across studies and should be considered when interpreting clinical outcomes (20).

Table-1. Clinical classification, characteristic features, scarring risk, and general management approaches for acne vulgaris

S.no.	Category	Dominant lesions and distribution	Scarring and PIH risk	Usual management tier (guideline-based)	References
1.	Mild	Predominantly comedones with few papules or pustules; face, sometimes trunk	Low, PIH possible, especially in darker skin	Topical therapy (retinoid and/or benzoyl peroxide, fixed combinations)	(21)
2.	Moderate	Numerous inflammatory papules and pustules, with comedones; face plus chest or back	Moderate, rises with duration and inflammation	Combination topicals, oral antibiotic (time-limited) or hormonal therapy in selected women	(22)
3.	Severe	Extensive inflammatory lesions, nodules, or cysts; scarring tendency	High, atrophic scars common	Oral isotretinoin or specialist-led combinations	(23)
4.	Scarring and dyspigmentation (sequelae)	Atrophic (icepick, boxcar, rolling), hypertrophic or keloidal scars; PIH	Not a severity grade; may persist after inflammation resolves	Early control of inflammation, scar and pigment-directed therapy	(24)

3.7 Acne scarring and post-inflammatory hyperpigmentation

Acne-related scarring is a clinically important consequence of persistent or severe inflammation. Clinical observations suggest that scar formation is influenced by the severity of inflammatory lesions and the time taken to initiate effective treatment (25). Atrophic scars, including icepick, boxcar, and rolling types, are encountered more frequently than hypertrophic or keloidal scars. Several grading approaches have been developed to characterize these morphological changes and support clinical assessment (26). Another relevant sequela is post-inflammatory hyperpigmentation (PIH), which may remain visible for several months after the active lesions have subsided. This is particularly relevant in individuals with darker skin phototypes, in whom residual pigmentation can become a major cosmetic and psychological concern. Consequently, improvement in active acne does not necessarily indicate complete recovery from its visible effects, as scarring and pigmentation may continue to influence patients' perceptions of their appearance and quality of life (27).

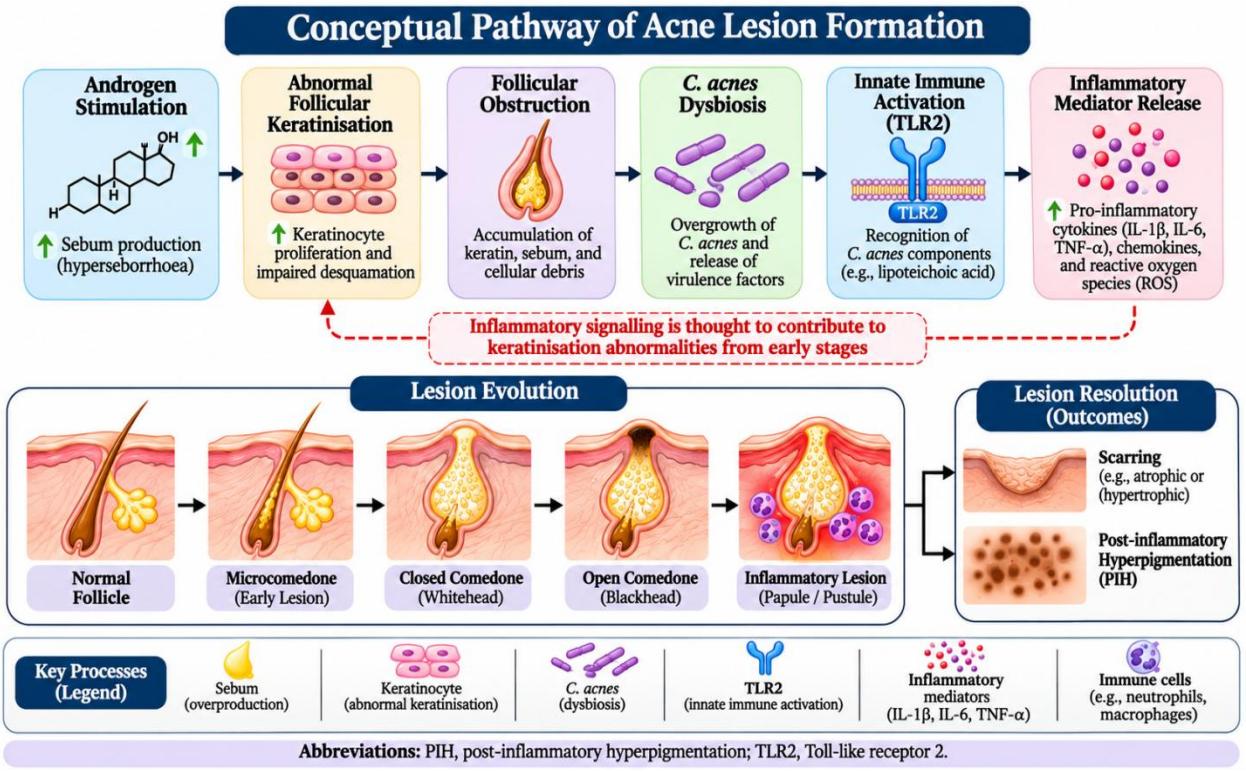


Figure-1. Conceptual pathway of acne lesion formation.

4. Understanding Quality of Life in Dermatological Conditions

The World Health Organization defines quality of life as an individual's perception of their position in life in the context of culture and value systems, in relation to goals, expectations, standards, and concerns. HRQoL narrows this to the aspects of life influenced by health and its treatment (28). A widely used conceptual model links biological and physiological variables to symptom status, functional status, general health perceptions, and overall quality of life, modulated by individual and environmental characteristics (29). The model is useful in dermatology because it explains why clinical signs need not map directly onto life impact: the same lesions may carry very different meaning depending on

personality, social context, and cultural expectations. Skin disease is distinctive because it is visible, can elicit others' reactions, and cannot be concealed easily (30). Dermatology-specific instruments were developed to capture symptoms, emotional response, and functioning in daily and social activities. Studies using such tools have shown that acne produces measurable impairment among adult dermatology patients. Patient-reported outcomes (PROs) are therefore essential complements to clinician-assessed severity, since they capture what matters to the patient and can detect residual burden after lesion counts improve (31).

Quality of life in acne is best viewed as multidimensional (Figure-3). Physical symptoms (pain, tenderness, itch) are usually less prominent than emotional and social domains. Psychological well-being, self-esteem, and body image are central social functioning, daily activities, and, in young adults, educational and early occupational roles complete the picture. Because these domains interact, we adopt a biopsychosocial perspective (Figure-2) while recognizing that the evidence for each pathway differs in strength. Given the multidimensional nature of acne-related impairment, a biopsychosocial framework provides a useful approach to understanding the interconnected psychological, social, and functional consequences of acne in young adults (Figure-2).

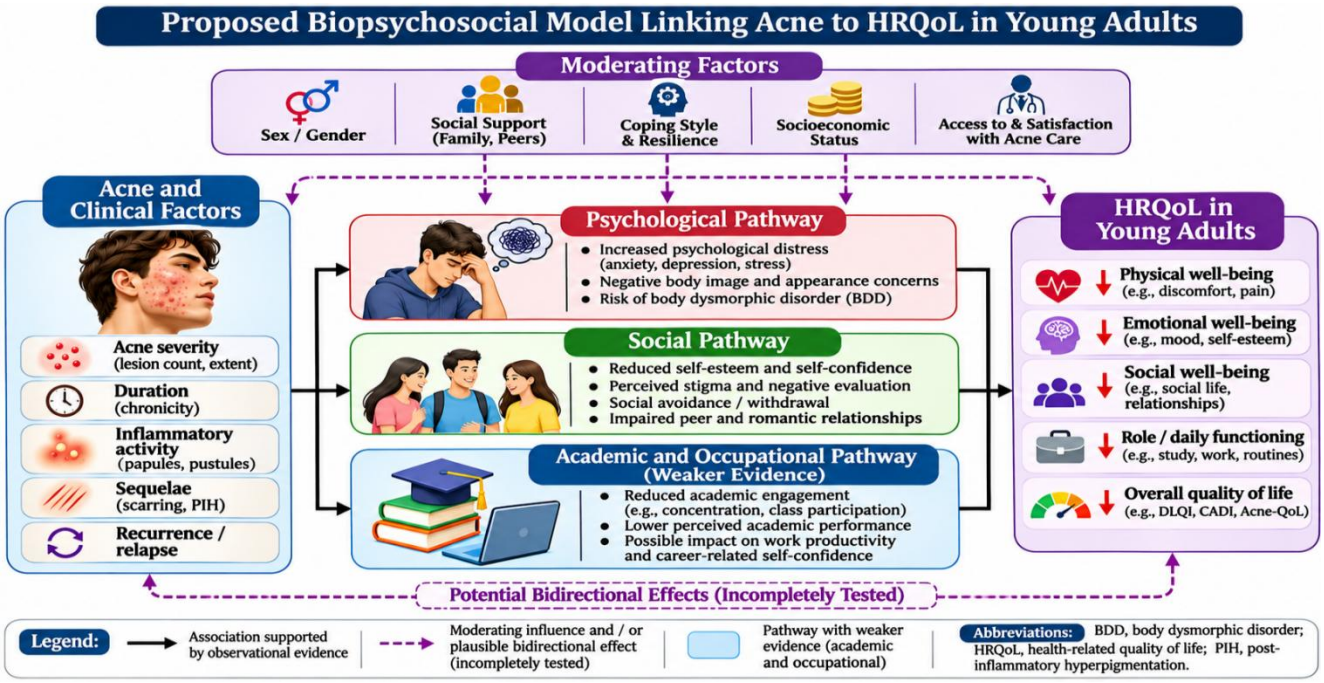


Figure-2. Proposed biopsychosocial model linking acne to HRQoL in young adults

5. Validated Quality-of-Life Assessment InstrumentsInstruments used in acne research include generic, dermatology-specific, and acne-specific measures (Table-2).

Table-2. Characteristics, scoring systems, clinical applications, strengths, and limitations of quality-of-life assessment instruments used in acne vulgaris.

S.no.	Instrument	Type and content	Format and scoring	Typical population	Strengths	Limitations	References

1.	DLQI	Dermatology-specific; symptoms, daily activities, leisure, work/school, relationships, treatment	10 items; 7-day recall; score 0–30, higher is worse; banded interpretation	Adults (≥16 years)	Brief; widely translated; cross-disease comparison	Not acne-specific, limited appearance and scarring content, ceiling effects at low severity	(32)
2.	CADI	Acne-specific disability	5 items; score 0–15	Adolescents and adults	Very quick; routine-clinic use	Narrow content, limited emotional and body-image depth	(33)
3.	Acne-QoL	Acne-specific; self-perception, role-social, role-emotional, acne symptoms	19 items; four domains	Facial acne in trials	Domain detail; used as trial endpoint	Longer, facial focus, limited scarring and PIH content	(33)
4.	Acne-QOLI	Acne-specific brief index	Brief (item count to be verified at source)	Adults	Brevity	Less extensive validation data	(34)
5.	CDLQI	Paediatric dermatology-specific	10 items	About 4–16 years	Child-friendly; adolescent comparison	Not for most 18–25-year-olds, mixed-instrument comparability issues	(35)

6.	Skindex (generic dermatology)	Symptoms, emotions, functioning across skin disease	Multi-item; versions of varied length	Adults	Cross-disease; emotion-sensitive	Not acne-specific, longer	(36)

Several instruments are available for evaluating the impact of acne and other dermatological conditions on health-related quality of life (HRQoL), although their coverage and clinical applications differ (37). The Dermatology Life Quality Index (DLQI) is a widely used, ten-item questionnaire with a one-week recall period and a total score ranging from 0 to 30, with higher scores indicating greater impairment. Its brevity, availability in multiple languages, and applicability across different skin disorders make it useful in both clinical practice and research (38). However, because it is not specifically designed for acne, it may not adequately capture concerns related to scarring, cosmetic practices, or appearance-related distress, while its recall period may overlook fluctuations in disease activity. The Cardiff Acne Disability Index (CADI), a five-item acne-specific instrument scored from 0 to 15, offers a shorter alternative for routine assessment (39). Despite its practical value, the limited number of questions may not fully reflect broader concerns involving self-esteem, body image, and the anatomical distribution of lesions. In comparison, the 19-item Acne Quality of Life Questionnaire (Acne-QoL) assesses four domains: self-perception, role-social, role-emotional, and acne symptoms (40). It's more detailed structure allows closer examination of the emotional and social consequences of facial acne, although the length of the questionnaire may restrict its use in some routine clinical settings. A shorter alternative, the Acne Quality of Life Index (Acne-QOLI), has also been proposed. For younger populations, the Children's Dermatology Life Quality Index (CDLQI), developed for children and adolescents approximately 4–16 years of age, is mainly relevant when interpreting adolescent research and is generally unsuitable for individuals aged 18–25 years. Consequently, studies using different assessment instruments across age groups may produce results that are difficult to compare directly (41). Comparisons between generic and acne-specific questionnaires suggest that disease-specific instruments may be more responsive to changes related to acne, whereas generic dermatological measures allow comparisons across different skin conditions. Previous investigations have also demonstrated that patient-reported assessments and clinical severity measures do not always show strong agreement, emphasizing the importance of considering both perspectives during evaluation (9). Despite their usefulness, existing instruments have several limitations, including possible floor and ceiling effects, insufficient assessment of scarring and post-inflammatory hyperpigmentation (PIH), variations in cultural and linguistic adaptation, and recall-related bias. Moreover, validation specifically for young adults aged 18–25 years remains limited, and relatively few instruments adequately incorporate priorities identified by patients themselves. Although these questionnaires provide valuable information about acne-related impairment, they cannot replace direct assessment of psychological concerns (42). Their differences in evaluating emotional, social, physical, and functional aspects of daily life are summarized in Figure-3.

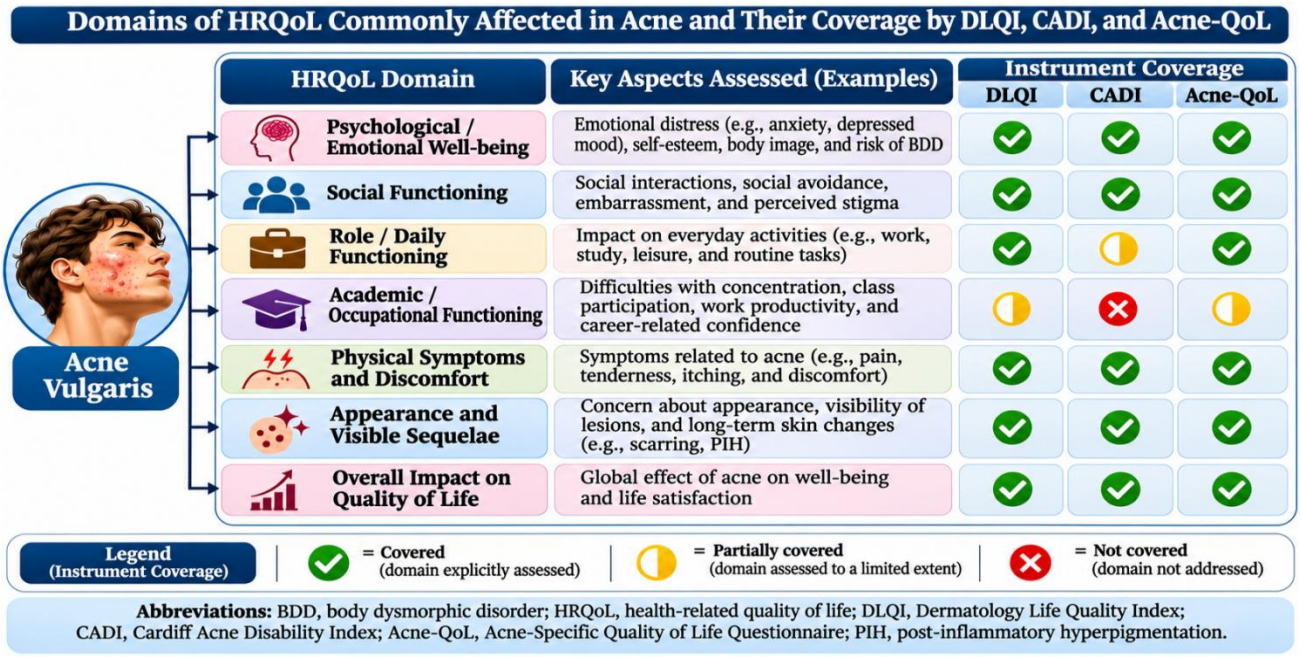


Figure-3. HRQoL domains affected by acne and their coverage by DLQI, CADI, and Acne-QoL.

6. Psychological Impact of Acne Vulgaris

The evidence summarized here (Table-3) is predominantly cross-sectional. Associations are well replicated, but the direction of effect, the role of confounders such as sex, socioeconomic status, other mental health conditions, and shared vulnerability, and the persistence of effects into adulthood remain incompletely resolved (43).

Table-3. Psychological consequences of acne vulgaris in adolescents, young adults, and adults, including depression, anxiety, suicidal ideation, body image disturbance, and appearance-related distress.

S.no.	Domain	Summary of findings	Predominant designs	Strength of evidence and caveats	References
1.	Depression and depressive symptoms	Higher symptom levels and higher odds of depression in acne; higher incident-depression risk shortly after diagnosis in one UK cohort	Cross-sectional; one large cohort, meta-analysis	Moderate for association, causality unproven (confounding, detection bias, treatment effects)	(44)
2.	Anxiety and distress	Elevated anxiety, social-phobia-type symptoms in acne cohorts and	Cross-sectional	Moderate for association, partly shared	(45)

		dermatology outpatients		with other dermatoses	
3.	Suicidal ideation	Higher reported ideation in adolescent and clinic samples	Cross-sectional	Low-moderate, limited data in community young adults, absolute risk unknown	(46)
4.	Self-esteem and body image	Lower body satisfaction and self-esteem; patterns differ by sex	Cross-sectional surveys	Moderate, heterogeneous measures	(47)
5.	BDD features	Symptoms in a minority of acne patients	Cross-sectional clinic study	Low-moderate, limited replication	(48)
6.	Appearance-related distress (including trunk)	Distress with face, back, and chest involvement	Cross-sectional	Moderate	(49)
7.	Emotional distress, frustration	Embarrassment, anger, helplessness; improvement with treatment	Qualitative; uncontrolled cohorts	Low-moderate	(50)
8.	Scarring-related burden	Negative perception and QoL impact from visible scars	Surveys	Low-moderate, self-selection, no long-term cohorts	(51)

6.1. Depression and depressive symptoms

Early clinic-based work reported that people with acne, alongside those with other common dermatoses, endorsed depressive symptoms and suicidal ideation more often than expected. Studies using disease-specific QoL measures alongside psychometric scales found that acne-related impairment was associated with anxiety and depression scores (44). A meta-analytic review has since concluded that acne is associated with higher odds of depression and anxiety, with considerable heterogeneity between studies and a predominance of cross-sectional designs. The strongest longitudinal signal comes from a UK population-based cohort in which people with acne had a higher subsequent risk of incident depression than people without acne, with risk concentrated in the period shortly after diagnosis (52). That pattern is compatible with an acne-to-depression pathway, but it is equally compatible with detection bias (more frequent healthcare contact), shared risk factors, and treatment effects, and it cannot establish causation.

Survey and adolescent data point in the same direction, and a population-based adolescent study reported higher rates of suicidal ideation and mental health problems among those with acne. The association with suicidality, while important, is estimated mostly in adolescents and clinic populations; generalization to community young adults is not secure, and the absolute risk attributable to acne is unknown (53).

6.2 Anxiety and psychological distress

Anxiety symptoms appear to be at least as consistently elevated as depressive symptoms. A Lithuanian study of acne patients reported anxiety, depressive symptoms, and suicidal ideation alongside reduced QoL, and social-phobia-type symptoms with associated disability have been described in acne cohorts (54). A European multicentre study of dermatology outpatients found raised anxiety and depression compared with controls across skin diseases, supporting the view that part of the burden is shared across visible dermatoses, not unique to acne. Suicidal ideation among dermatology patients has also been reported in cross-sectional work (55). These findings justify screening, but because most are cross-sectional and based on self-report, they should not be read as evidence that acne itself produces clinical anxiety disorders (56).

6.3 Self-esteem, self-confidence, and body image

Self-image is arguably the domain most proximal to acne. A population survey of late adolescents reported poorer body satisfaction, and in some analyses lower self-esteem, among those with acne, with patterns that differed between sexes (57). Reviews of self-esteem research in acne describe consistent reductions in self-worth and confidence, with improvement reported after effective treatment (58). The Rosenberg self-esteem scale is commonly used in this literature, although its use is rarely harmonized across studies. Body image disturbance can extend beyond ordinary dissatisfaction. A study of acne patients found symptoms consistent with body dysmorphic disorder (BDD) in a non-trivial minority, and clinicians should consider BDD when concern appears disproportionate to objective severity, because it changes management and may be associated with poor outcomes after procedural treatment (59). Appearance-related distress is not confined to the face: research in people with back and chest acne has documented considerable distress, indicating that visibility under clothing and in intimate contexts matters (60).

6.4 Appearance-related anxiety, emotional distress, and frustration

Qualitative and survey data describe embarrassment, self-consciousness, anger, and helplessness, particularly where multiple treatments have failed (61). Baseline anxiety and depression were elevated in patients referred for isotretinoin in an early cohort, and scores improved after treatment although uncontrolled this suggests that a substantial share of the distress is state-dependent and responsive to disease control (62). Frustration with the treatment pathway itself, including slow response, adverse effects, and perceived dismissal by clinicians, is an under-studied contributor to distress (63).

6.5 Long-term consequences of acne scarring

Scarring is a plausible mechanism for persistence of psychological burden after active disease has resolved (25). Survey research has reported that people with facial acne scars are perceived more negatively by observers, and that people with scars report social and emotional consequences (64). A

multi-country community survey of people with atrophic facial acne scars likewise reported meaningful QoL impact. These data are largely cross-sectional, self-selected, and survey-based prospective studies that follow patients from active acne through scarring outcomes with repeated HRQoL measures are scarce, so the long-term claim should be considered biologically and psychologically plausible and supported by emerging evidence, but not firmly established (65).

7. Social and Interpersonal Consequences

7.1 Social withdrawal, peer relationships, and stigma

Adolescent acne has long been associated with embarrassment, avoidance of social situations, and perceived peer rejection (66). Experimental work suggests that these concerns are not merely subjective: in a blinded comparison, adolescents with acne were judged more negatively by adult and peer raters than those without, indicating that stigma can be externally enacted. Community data in mid-adolescence similarly link acne with psychological morbidity and with knowledge and beliefs about the condition (67). Evidence on teasing and bullying specifically in 18–25-year-olds is sparse; most data refer to school-age populations, and the extent to which stigma operates in university and workplace settings has been little studied.

7.2 Romantic relationships and intimacy

Acne can affect willingness to initiate or maintain partnerships, and concerns about physical contact are plausible for truncal acne. Items related to sexual difficulties and relationships appear in DLQI and CADI but are rarely analyzed separately, so quantitative evidence on romantic and sexual outcomes in young adults remains limited and should be regarded as a research gap (68).

7.3 Social media and appearance comparison

Social media has become an important context in which young adults encounter and evaluate appearance-related information. Exposure to idealized photographs, edited images, and beauty-focused content may influence how individuals perceive their own skin. Previous research on body image has linked appearance-based social media engagement with increased dissatisfaction, particularly when users frequently compare themselves with idealized representations of others. For individuals experiencing acne, repeated exposure to images depicting apparently flawless skin may intensify concerns about visible lesions and perceived imperfections. However, this relationship requires cautious interpretation because much of the available evidence comes from general body-image research rather than studies specifically examining people with acne (69). Further longitudinal research is therefore needed to establish whether social media exposure directly contributes to acne-related psychological distress (70).

7.4 Social confidence and participation

Studies using acne-specific instruments consistently identify social and role-related items (avoiding mixing with others, difficulty with photographs, feeling self-conscious) among the most endorsed domains (71). Participation in sport, swimming, and communal activities may be curtailed by truncal acne or fear of exposure, although quantitative data are limited. Table-4 summarizes the social, academic, occupational, and functional evidence and its relative strength.

Table- 4. Social, academic, occupational, and functional consequences of acne vulgaris, including the available evidence and associated research gaps.

S.no.	Domain	Reported or plausible consequences	Evidence base	Evidence status	References
1.	Social withdrawal and peer relationships	Avoidance of social situations, perceived rejection	Adolescent surveys, qualitative work	Established association in adolescents, limited young-adult data	(72)
2.	Stigma and observer judgement	More negative judgements of people with acne	Blinded comparison study	Emerging, small and adolescent-focused	(72)
3.	Romantic and sexual relationships	Difficulty with intimacy, truncal concerns	Questionnaire items; limited dedicated studies	Research gap	(73)
4.	Social media and appearance comparison	Higher body dissatisfaction with appearance-focused media	General body-image research	Inferential for acne	(74)
5.	Academic functioning	Self-reported concentration or participation difficulties	Surveys	Weak, mediation by mood and sleep untested	(75)
6.	Occupational functioning	Lower confidence; possible employment disadvantage	Early observational data; surveys	Weak, limited objective data	(76)
7.	Sleep and daily functioning	Skin-care burden, clothing choices, leisure restriction	DLQI-type items	Weak for sleep (hypothesis), moderate for daily activities	(77)

8. Academic, Occupational, and Functional Consequences

8.1 Academic performance and classroom participation

Evidence that acne impairs objective academic performance is weak. Most studies assess self-reported difficulty concentrating, reluctance to participate, or avoidance of presentations, typically in adolescents, and rarely adjust for mood disorder. Where cognitive and academic effects occur, they may be mediated by depression, anxiety, sleep disturbance, or social avoidance rather than by acne itself, a hypothesis requiring longitudinal testing in university populations (78).

8.2 Workplace confidence, productivity, and employment

Acne may also influence an individual's confidence in professional environments. Previous observational research has suggested a possible relationship between acne and unemployment among young people, although the available findings do not establish a direct causal association. Other studies have described concerns about physical appearance during job interviews and interactions with colleagues. However, evidence concerning measurable occupational outcomes, including absenteeism, work performance, and income, remains limited, particularly among individuals aged 18–25 years (79). Therefore, the extent to which acne affects employment opportunities and workplace productivity requires further investigation.

8.3 Sleep and daily functioning

The influence of acne on sleep and routine activities has received relatively little direct research attention. Physical discomfort, time spent on skin-care practices, and persistent concerns about appearance may interfere with an individual's daily routine. Quality-of-life questionnaires, including the DLQI, capture some practical limitations through questions concerning clothing choices, leisure activities, and everyday responsibilities (80). However, the extent to which acne independently contributes to sleep disturbance remains uncertain. Further studies using dedicated sleep assessments are needed before a definite relationship can be established.

9. Factors Influencing Quality-of-Life Impairment

Several clinical and personal characteristics may influence the degree of quality-of-life impairment experienced by individuals with acne. These include disease severity and duration, anatomical distribution, scarring, post-inflammatory hyperpigmentation, demographic characteristics, and previous treatment experiences (81). Their relative contributions vary across individuals, and the available evidence does not support the use of any single characteristic as a reliable predictor of psychological or functional burden. The factors and their reported associations are summarized in Table-5.

Table-5. Factors associated with impaired health-related quality of life among young people and adults with acne vulgaris.

S.no.	Factor	Association with impairment	Quality and consistency of evidence	Comments	References
1.	Clinical severity	Positive, generally modest to moderate	Consistent direction; variable strength	Not a sufficient proxy for burden	(82)
2.	Duration and treatment failure	Plausibly higher distress	Limited; confounded	Often cross-sectional	(83)
3.	Facial involvement	High salience	Moderate	Acne-QoL focus on face	(84)

4.	Truncal involvement	Appearance distress, intimacy concerns	Limited	Under-measured	(85)
5.	Scarring	Higher impact and negative perception	Low–moderate	Few longitudinal data	(86)
6.	PIH and skin of colour	Prominent concern	Limited	Often under-captured by scales	(87)
7.	Biological sex and gender	Mixed; varies by outcome and instrument	Inconsistent	Gender-diverse people essentially unstudied	(88)
8.	Age	Younger people may be more vulnerable to appearance concerns	Limited, not age-stratified	18–25 group under-studied	(89)
9.	Socioeconomic and cultural context	Shapes access and meaning	Limited	Single-country surveys	(90)
10.	Support and prior treatment experiences	Plausible moderators	Limited	Few acne-specific longitudinal data	(91)

Several factors may influence the extent to which acne vulgaris affects an individual's quality of life. Clinical severity is one such factor, although studies conducted in Greek, Hong Kong Chinese, and Saudi populations have shown that its relationship with quality-of-life scores is not always consistent. In general, the association appears modest to moderate, suggesting that the number and severity of lesions alone cannot fully explain the psychological burden experienced by patients. Disease duration and repeated unsuccessful treatment attempts may further contribute to emotional distress, although these factors are difficult to evaluate independently of age and disease severity (92). The location of acne lesions also deserves consideration. Facial acne is particularly noticeable and is frequently assessed in quality-of-life studies using instruments such as the Acne-QoL questionnaire. However, lesions on the chest and back can also affect body confidence, clothing preferences, and personal relationships, despite receiving less attention in clinical research. Residual changes following active acne, especially scarring and post-inflammatory hyperpigmentation (PIH), may continue to influence patients' perceptions of their appearance. This concern is particularly relevant among individuals with darker skin tones, in whom pigmentation changes may remain prominent even after inflammatory lesions have resolved.

10. Treatment Approaches and Their Impact on Quality of Life

Treatment recommendations are well summarized in current guidelines and international consensus. This section focuses on how treatment relates to HRQoL (Table-6). A general limitation is that many pivotal trials report lesion counts and investigator global assessments as primary endpoints, with patient-reported HRQoL as secondary or absent, so the QoL benefit of specific agents is less well characterized than their efficacy (93).

Table-6. Acne treatment approaches and their potential influence on health-related quality of life, including benefits, treatment-related limitations, and evidence considerations.

S.no.	Treatment	Potential QoL-related benefits	Limitations and adverse effects relevant to QoL	Evidence notes	References
1.	Topical retinoids	Reduce comedones; maintenance role	Irritation, dryness, initial flare perceptions; slow onset	Guideline first-line component	(21)
2.	Benzoyl peroxide	Reduces inflammatory lesions; limits resistance	Dryness, irritation, bleaching of fabric and hair	Guideline first-line component	(94)
3.	Topical antibiotics	Anti-inflammatory benefit	Resistance, avoid monotherapy	Use with benzoyl peroxide	(95)
4.	Oral antibiotics	Control of moderate-to-severe inflammation	Resistance, GI upset and photosensitivity; time-limited use advised	Stewardship emphasised	(96)
5.	Hormonal therapy (COC, spironolactone)	Option for women with hormonal pattern	Counselling on contraindications and side effects	Limited head-to-head evidence between COC formulations	(97)
6.	Oral isotretinoin	High efficacy, HRQoL and mood improvement in cohort studies	Teratogenicity, mucocutaneous dryness; monitoring burden; mood concerns historically debated	Recent meta-analyses do not show increased depression	(98)
7.	Combination strategies	Multi-pathway control;	Complexity may reduce adherence	Adherence often	(99)

		guideline-supported		suboptimal	
8.	Adherence and satisfaction support	Improves expected outcome and engagement	Requires time and communication	Evidence from observational data	(100)

10.1 Topical agents

Topical retinoids and benzoyl peroxide are first-line components for most patients and are recommended in combination with each other or with other agents in guidelines. Their principal QoL relevant limitations are irritation, dryness, and erythema (which may transiently worsen appearance), and slow onset of benefit, which can undermine adherence. Benzoyl peroxide can bleach fabric and hair, a practical nuisance for young adults. Topical antibiotics should not be used as monotherapy because of resistance concerns fixed-dose combinations with benzoyl peroxide are favoured over antibiotic monotherapy (101).

10.2 Oral antibiotics

Oral tetracycline-class antibiotics are used for moderate-to-severe inflammatory acne, ideally for limited duration and with a non-antibiotic topical partner. A systematic review documented increasing antibiotic resistance in acne treated topically and orally, which has influenced guideline emphasis on stewardship (96). Adverse effects (gastrointestinal upset, photosensitivity) and the prolonged courses that patients often experience may be burdensome.

10.3 Hormonal therapies

Combined oral contraceptives are effective for acne in suitable women, although a Cochrane review found limited evidence to distinguish between formulations. Spironolactone has support in adult women from a hybrid systematic review. Hormonal treatments may be particularly relevant to young women whose acne has a hormonal pattern, but they require counseling about contraindications and side effects, and their psychological effects are an area of ongoing debate in the broader literature that this review cannot resolve (22).

10.4 Oral isotretinoin

Oral isotretinoin is the most effective option for severe, scarring, or treatment-refractory acne, with guideline support for use in severe disease and for persistent moderate disease causing psychosocial burden. Early-cohort data showed improved anxiety, depression, and QoL measures after treatment, and other prospective studies likewise reported psychological improvement as acne cleared. The relationship between isotretinoin and depression has been controversial. A review of retinoic acid and affective disorders concluded that the evidence for an association was suggestive but not definitive and limited by methodological problems. A cohort of adolescents found mood improvement during isotretinoin therapy. More recent systematic reviews and meta-analyses have reported no increase, and in some analyses a reduction, in depressive symptoms during treatment. This body of work does not exclude rare idiosyncratic reactions, which remain a matter of pharmacovigilance and clinical vigilance, but it argues against withholding isotretinoin in appropriate patients on the basis of presumed mood risk. Isotretinoin

remains teratogenic and requires pregnancy prevention measures, and mucocutaneous dryness is common (102). A baseline and follow-up mood assessment is sensible practice, particularly in patients with prior psychiatric history.

10.5 Combination strategies, adherence, and satisfaction

Guidelines favour combination therapy targeting several pathogenic pathways. Adherence in acne is often suboptimal; a large international observational study documented non-adherence and linked it to treatment complexity and expectations. Because QoL impairment may persist when treatment fails to reach the patient's goals, shared decision making and realistic counselling on time to response are key (103). Patient satisfaction depends on factors beyond lesion clearance, including speed of response, tolerability, convenience, and the clinician relationship.

10.6 Does effective treatment improve psychological and social well-being?

The weight of evidence supports a beneficial effect: HRQoL measures improve with acne improvement, sometimes dramatically after isotretinoin, and patient-centred measures can capture changes that clinical counts alone do not. However, many of these studies are uncontrolled before-and-after designs, regression to the mean and placebo responses are plausible contributors, and follow-up is often short (104). It is also unclear whether psychological improvement persists after discontinuation, particularly where scarring or PIH remains, or whether patients with pre-existing mood disorders derive the same benefit.

11. Psychological Support and Holistic Management

Patient education and communication: Clear explanation of acne as a medical condition, not a hygiene failure, correcting myths, and setting expectations on time to response are low-cost interventions. Dermatologist–patient communication that acknowledges emotional burden may improve engagement and adherence, but trials specifically testing communication interventions in acne are lacking (105).

Psychological screening: Brief validated tools, such as the PHQ-9 for depression, the GAD-7 for anxiety, or the Hospital Anxiety and Depression Scale, can be used by non-psychiatric clinicians. Screening is justified by the high prevalence of psychological morbidity in dermatology patients and it’s under recognition it should be accompanied by a defined pathway for positive screens, including referral and urgent management of suicidal ideation, because screening without follow-up is of uncertain value. BDD-focused questions are warranted when distress appears disproportionate to severity (106).

Psychological and multidisciplinary interventions: Cognitive behavioral therapy (CBT) and related approaches have an evidence base in other skin conditions and in appearance-related distress, and their application to acne is rational, especially for persistent distress or comorbid mood or anxiety disorder; however, acne-specific randomized evidence for CBT in young adults is limited and no firm recommendation on its routine use can be made. Multidisciplinary care, involving dermatology, primary care, mental health, and, where relevant, endocrinology and gynaecology, is appropriate for complex cases. Psychodermatology services remain scarce in many settings (107). Timely control of inflammatory lesions is particularly important because persistent disease may increase the likelihood of scarring and prolonged skin changes. In addition, patients experiencing substantial emotional distress may benefit from appropriate psychological assessment and referral when necessary. Bringing together clinical

evaluation, patient-reported outcomes, individualized treatment, and regular follow-up provides a more comprehensive approach to acne care (Figure-4).

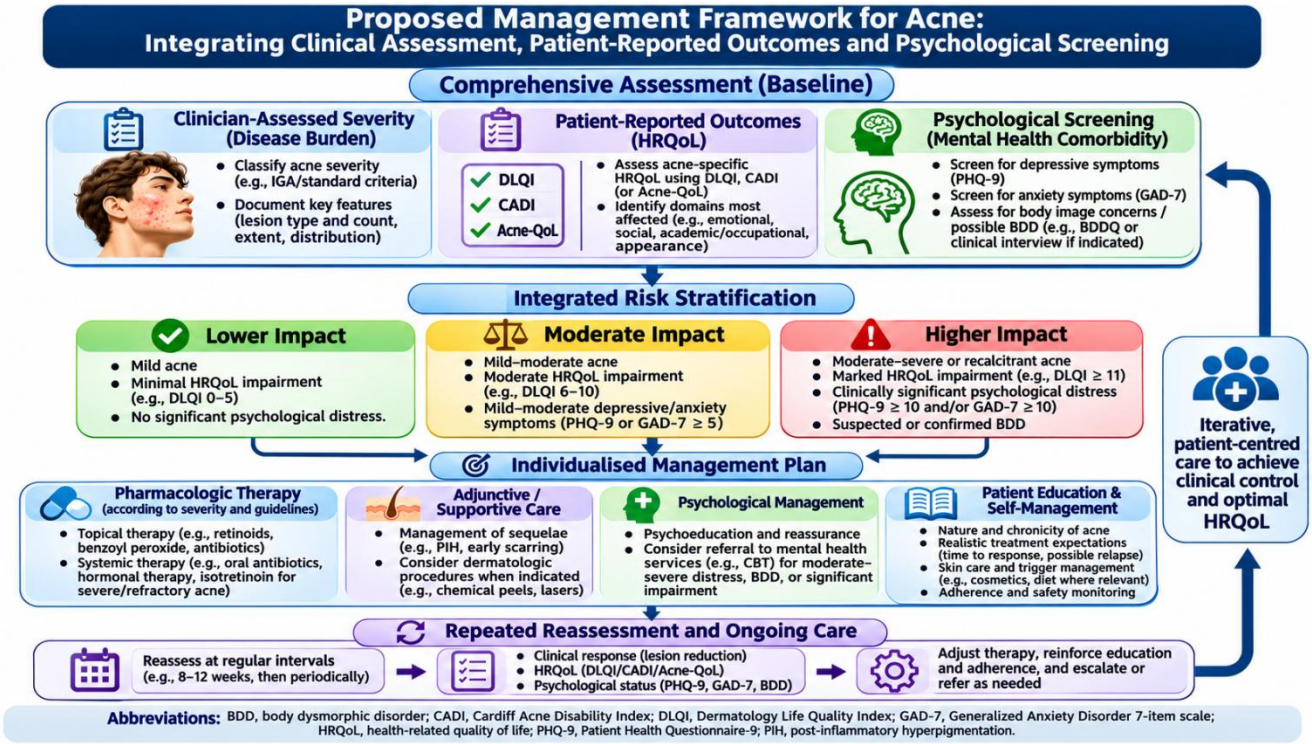


Figure-4. Proposed integrated management framework for acne vulgaris.

12. Critical Discussion

The findings discussed in this review raise several important questions about the relationship between acne vulgaris and quality of life. The following discussion examines these issues by considering the available clinical and psychosocial evidence, highlighting areas where research findings are relatively consistent as well as those where important uncertainties remain (108).

12.1 Why can mild acne produce considerable impairment?

The degree of psychological distress associated with acne does not always correspond to the clinical severity of the condition. Although mild acne involves relatively few lesions, its visibility may still influence how individuals perceive their appearance and interact with others. This may be particularly relevant during young adulthood, when physical appearance, social acceptance, and personal relationships often play an important role in everyday life. Repeated comparison with idealized images on social media may further contribute to dissatisfaction with one's appearance, although direct evidence linking these processes specifically to acne remains limited. Another possible source of concern is the fear that existing lesions may leave permanent scars. In addition, general dermatological assessment tools, such as the DLQI, may not capture every aspect of appearance-related distress experienced by individuals with mild acne (109). These explanations offer possible reasons for the differences between clinical severity and patient-reported impairment, but their individual contributions require further investigation.

12.2 Is clinical severity consistently associated with psychological distress?

The relationship between clinical acne severity and psychological distress is not uniform across patients. Although several studies have identified a positive association between disease severity and quality-of-life impairment, the strength of this relationship is generally modest to moderate. Notably, considerable emotional and social difficulties have also been reported among individuals with mild or moderate acne, while some patients with more extensive disease describe relatively limited impairment. This variation indicates that clinical grading alone cannot provide a complete picture of the patient's experience (110). Factors such as individual coping ability, personality, social support, and pre-existing psychological conditions may also influence the level of distress, although these variables have not been adequately investigated in many existing studies. Therefore, clinical assessment should be accompanied by direct evaluation of patient-reported concerns (111).

12.3 How do body image and appearance concerns influence young adults?

Body image is an important consideration when examining the psychological consequences of acne vulgaris. Visible lesions may influence how young adults evaluate their appearance and interact with others, particularly in situations involving photographs, social gatherings, dating, and professional activities. In some individuals, dissatisfaction with appearance may become excessive and resemble features of body dysmorphic disorder (BDD). Previous research on body image also suggests that frequent appearance-based comparisons may contribute to emotional distress, although their specific role in acne-related quality-of-life impairment remains insufficiently explored (112).

12.4 Are there differences by biological sex and gender-related factors?

Published findings do not establish a consistent difference in the psychological impact of acne between males and females. Although some studies have reported greater quality-of-life impairment among women, other investigations have identified comparable levels of distress despite differences in clinical severity. These variations may be influenced by hormonal factors, patterns of adult-onset acne, social expectations regarding physical appearance, and differences in how individuals communicate psychological concerns. However, these explanations should be considered possible contributing factors rather than established conclusions. Another important limitation is the lack of research involving transgender and gender-diverse young adults (113). Their experiences, including the potential influence of gender-affirming hormonal treatment on acne, remain poorly represented in the available quality-of-life literature.

12.5 Scarring, PIH, and long-term quality of life

Acne-related scarring and post-inflammatory hyperpigmentation may continue to affect quality of life even after active inflammatory lesions have improved. Clinical observations have associated scar formation with greater disease severity and delayed treatment, while survey-based research has described appearance-related concerns and negative social perceptions among individuals with visible acne scars. PIH is another important consideration, particularly among people with darker skin tones, in whom residual pigmentation may remain noticeable for an extended period. These findings support the importance of timely acne management and appropriate attention to residual skin changes. Nevertheless, the independent contribution of scarring and PIH to long-term psychological impairment has not been

clearly established (51). Prospective studies are required to determine whether treatment of these residual changes produces measurable improvements in patients' quality of life.

12.6 Effect of successful treatment

Improvement in acne following treatment is generally accompanied by better patient-reported quality of life and, in several studies, reductions in anxiety and depressive symptoms. These changes suggest that effective disease control may provide benefits beyond the reduction of visible lesions. Recent meta-analyses have also not demonstrated an overall increase in depressive symptoms associated with isotretinoin use, although questions concerning individual susceptibility and the interpretation of mood-related outcomes remain relevant. The available evidence should nevertheless be interpreted cautiously because many studies have used uncontrolled before-and-after designs and relatively short follow-up periods (114). It is also uncertain whether improvements in psychological well-being are maintained after treatment discontinuation, particularly among patients with persistent scarring, PIH, or pre-existing mental health difficulties. Thus, successful acne treatment appears to be associated with psychological benefits, but the extent and durability of these improvements require further investigation (115).

12.7 Limitations of existing instruments

Several instruments are available for assessing the impact of acne on quality of life, although each has certain limitations. The Dermatology Life Quality Index (DLQI) is widely used because of its simplicity and established validity in dermatological practice; however, it was not specifically developed to capture all concerns associated with acne. The Cardiff Acne Disability Index (CADI) provides a shorter, disease-specific assessment, but may not fully reflect the broader emotional experiences of affected individuals. In comparison, the Acne Quality of Life Questionnaire (Acne-QoL) evaluates several acne-related concerns in greater detail, although its length may limit its convenience in some clinical settings. Another important limitation is the lack of adequate validation specifically among young adults aged 18–25 years. Differences in recall periods, cultural adaptation, and the assessment of residual changes such as scarring and PIH may further influence the interpretation of results (116). These limitations make direct comparisons between studies difficult and highlight the need for more comprehensive, age-appropriate assessment tools (Table-2).

12.8 Why incorporate psychological screening?

Psychological screening deserves consideration in acne management because emotional difficulties may remain unnoticed during routine dermatological consultations. Research has reported associations between acne and symptoms of depression, anxiety, and reduced self-esteem, although the strength of these relationships varies across populations. Screening may help clinicians identify patients who require additional psychological assessment, particularly when emotional distress appears disproportionate to the observed severity of their skin condition. It may also provide useful information when discussing treatment preferences, adherence, and the patient's overall response to therapy (117). Nevertheless, screening should be accompanied by an appropriate referral and follow-up process. False-positive results, limited consultation time, and the availability of mental health services are practical challenges. Furthermore, evidence demonstrating that routine psychological screening independently improves acne-related outcomes remains limited. Therefore, screening is best considered a supportive component of

comprehensive patient care rather than a substitute for clinical assessment or a proven therapeutic intervention (118).

12.9 Evidence gaps specific to 18–25-year-olds

Despite growing interest in the psychosocial consequences of acne, research specifically involving young adults aged 18–25 years remains limited. Much of the available evidence comes from adolescent populations, mixed-age dermatology clinics, or studies involving adult women, making it difficult to establish whether the reported findings apply equally to this age group. Longitudinal investigations examining changes in clinical severity, psychological well-being, and quality of life over time are particularly lacking (119). There is also insufficient representation of individuals with darker skin tones, males, and transgender and gender-diverse populations. In addition, outcomes related to academic performance, employment opportunities, intimate relationships, and everyday social participation have not been adequately investigated. Addressing these limitations would provide a clearer understanding of the challenges faced by young adults and support the development of more appropriate patient centered interventions (120).

13. Research Gaps and Future Perspectives

Further research is needed to develop a clearer understanding of the long-term effects of acne vulgaris on the quality of life of young adults. Longitudinal studies involving repeated clinical and psychological assessments would help determine how changes in disease severity relate to emotional well-being over time. Such investigations should also consider pre-existing mental health conditions, socioeconomic circumstances, and other factors that may influence patient outcomes. Future clinical trials should give greater attention to patient-reported outcomes by incorporating validated quality-of-life measures alongside conventional assessments of lesion severity. Follow-up beyond the completion of treatment would also help establish whether improvements in psychological well-being are maintained and whether relapse affects patients' daily lives. There is a further need to develop and validate assessment tools that adequately address acne scarring, post-inflammatory hyperpigmentation, truncal involvement, and concerns specific to young adults (121). The influence of social media, appearance-related stigma in educational and occupational environments, and the experiences of gender-diverse individuals also deserves greater attention. Although inflammatory and neuroendocrine mechanisms may offer possible explanations for the relationship between skin disease and psychological well-being, their specific contribution to acne-related distress remains insufficiently understood. Addressing these research priorities would help strengthen the evidence base and support more individualized approaches to acne management in young adults (122).

14. Conclusion

Acne vulgaris represents more than a common inflammatory skin condition, as its effects may extend into several aspects of an individual's emotional, social, and everyday life. The evidence reviewed indicates that acne is associated with psychological difficulties, including depressive and anxiety symptoms, reduced self-esteem, body image concerns, and impaired health-related quality of life. Importantly, the degree of impairment does not always correspond to the clinical severity of the disease. Visible facial lesions, truncal involvement, scarring, and post-inflammatory hyperpigmentation may

contribute to additional concerns, even when active acne appears relatively mild. Although improvement in skin condition is generally accompanied by better quality-of-life outcomes, the long-term psychological benefits of treatment and the independent contribution of residual skin changes remain incompletely understood. Evidence concerning academic performance, employment, and other functional outcome is also limited. These uncertainties are particularly relevant to young adults aged 18–25 years, who remain underrepresented in age-specific research. A comprehensive approach to acne management should therefore consider clinical findings alongside patient-reported experiences, appropriate psychological assessment, timely treatment, and regular follow-up. Further well-designed longitudinal and interventional studies are needed to clarify these relationships and strengthen the evidence for individualized, patient-centered acne care.

LIST OF ABBREVIATIONS

Abbreviation	Full form
Acne-QoL	Acne Quality of Life Questionnaire
Acne-QOLI	Acne Quality of Life Index
BDD	Body dysmorphic disorder
CADI	Cardiff Acne Disability Index
CBT	Cognitive behavioural therapy
CDLQI	Children's Dermatology Life Quality Index
COC	Combined oral contraceptive
DLQI	Dermatology Life Quality Index
GAD-7	Generalized Anxiety Disorder 7-item scale
GEA	Global Acne Severity Scale
HADS	Hospital Anxiety and Depression Scale
HRQoL	Health-related quality of life
IGA	Investigator's Global Assessment
PHQ-9	Patient Health Questionnaire-9
PIH	Post-inflammatory hyperpigmentation
PRO	Patient-reported outcome
QoL	Quality of life

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