Association between acne and anxiety in adolescents and young adults: A systematic review of observational studies

Associação entre acne e ansiedade em adolescentes e jovens adultos: Uma revisão sistemática de estudos observacionais

Asociación entre el acné y la ansiedad en adolescentes y adultos jóvenes: Una revisión sistemática de estudios observacionales

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Abstract
Acne is a prevalent dermatological condition among adolescents and young adults, with a multifactorial etiology and high prevalence. Beyond its physical impacts, recent studies have demonstrated a strong association between acne and emotional manifestations, especially anxiety symptoms, which can impair self-esteem, quality of life, and social relationships. This study conducted a systematic literature review, following PRISMA guidelines, aiming to analyze the association between acne and anxiety in adolescents and young adults. The findings showed that individuals with acne are at higher risk of developing anxiety symptoms compared to control groups. Psychosocial factors, such as social stigma and body image perception, were identified as relevant contributors to the intensity of psychological distress. It is concluded that acne management should include not only dermatological interventions but also psychological support, ensuring a comprehensive and multidisciplinary approach.
Keywords: Acne; Anxiety; Adolescents; Young adults; Dermatology.

Resumo
A acne é uma condição dermatológica prevalente em adolescentes e jovens adultos, caracterizada por etiologia multifatorial e elevada prevalência. Além de seus impactos físicos, estudos recentes têm demonstrado forte associação entre acne e manifestações emocionais, em especial sintomas de ansiedade, que podem comprometer a autoestima, a qualidade de vida e as relações sociais. O presente estudo trata-se de uma revisão sistemática da literatura, seguindo as diretrizes do PRISMA, com o objetivo de analisar a associação entre acne e ansiedade em adolescentes e jovens adultos. Os resultados evidenciaram que indivíduos com acne apresentam maior risco de desenvolver sintomas ansiosos quando comparados a grupos controle. Observou-se ainda que fatores psicossociais, como estigma social e percepção da imagem corporal, exercem papel relevante na intensidade do sofrimento psicológico. Conclui-se que o manejo da acne deve incluir não apenas intervenções dermatológicas, mas também acompanhamento psicológico, visando uma abordagem integral e multidisciplinar.
Palavras-chave: Acne; Ansiedade; Adolescentes; Jovens adultos; Dermatologia.

Resumen
El acné es una condición dermatológica prevalente en adolescentes y adultos jóvenes, con etiología multifactorial y alta prevalencia. Más allá de sus repercusiones físicas, estudios recientes han demostrado una fuerte asociación entre el acné y las manifestaciones emocionales, en especial los síntomas de ansiedad, que pueden afectar la autoestima, la calidad de vida y las relaciones sociales. El presente estudio constituyó una revisión sistemática de la literatura, siguiendo las directrices del PRISMA, con el objetivo de analizar la asociación entre el acné y la ansiedad en adolescentes y adultos jóvenes. Los resultados mostraron que los individuos con acné presentan mayor riesgo de desarrollar síntomas ansiosos en comparación con grupos control. Se observó además que factores psicosociales, como el estigma social y la

percepción de la imagen corporal, influyen de manera relevante en la intensidad del malestar psicológico. Se concluye que el manejo del acné debe incluir no solo intervenciones dermatológicas, sino también acompañamiento psicológico, garantizando un abordaje integral y multidisciplinario.

Palabras clave: Acné; Ansiedad; Adolescentes; Adultos jóvenes; Dermatología.

1. Introduction

Acne is a common inflammatory dermatological condition that primarily affects adolescents and young adults, presenting with lesions such as comedones, papules, pustules, and, in severe cases, nodules or cysts (Williams et al.; 2012). Among the various types of acne, acne vulgaris is the most prevalent in this age group and predominantly manifests in areas with a high concentration of sebaceous glands, such as the face, chest, and back. The pathogenesis of acne involves increased sebum production, follicular hyperkeratinization, bacterial colonization by Cutibacterium acnes, and local inflammatory responses (Li et al., 2024; Eichenfield, Sprague & Eichenfield, 2021).

In addition to physical effects, acne has significant psychosocial consequences, potentially affecting self-esteem, generating dissatisfaction with body image, social isolation, and difficulties in interpersonal interactions (Samuels et al.; 2020). Adolescence and young adulthood are characterized by intense physical, emotional, and social changes, during which the perception of body appearance plays a central role in identity development and social integration. Studies indicate an association between acne and anxiety symptoms, showing that affected individuals may have a higher risk of developing anxiety, regardless of lesion severity (Saitta et al., 2011; Samuels et al., 2020; Hull & D'Arcy, 2005).

This systematic literature review, conducted according to the PRISMA 2020 guidelines (Page et al., 2021), aimed to analyze the relationship between acne and anxiety in adolescents and young adults. The review evaluated the consistency of the findings, gaps in the literature, and strategies for prevention, clinical management, and multidisciplinary follow-up, with the goal of promoting quality of life and mental health in this population.

2. Methodology

A documentary research of indirect sources was carried out on scientific articles in a systematic review (Snyder, 2019; Linares-Espinós et al., 2018), in a study of quantitative nature in relation to the number of five articles selected to compose the corpus of the research and of qualitative nature in relation to the discussions carried out on the articles (Pereira et al., 2018). A systematic review protocol was developed following the PRISMA 2020 guidelines (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) and was prospectively registered in PROSPERO (CRD420251162098) to ensure transparency and reproducibility. The search was conducted in the PubMed, SciELO, and LILACS databases, covering the period from 2005 to 2025, using the Boolean operators "AND" and "OR" combined with health science descriptors (DeCS/MeSH): acne; anxiety; adolescent; young adult.

2.1 Inclusion Criteria

Original observational studies (case–control, cross-sectional, or cohort designs) published in English or Portuguese that evaluated the association between acne and anxiety in adolescents (10–19 years) or young adults (20–35 years) were included. Only studies reporting anxiety outcomes measured with validated instruments and providing extractable data for the defined age groups were eligible.

2.2 Exclusion Criteria

Editorials, letters to the editor, case reports, qualitative studies, reviews, studies without a direct assessment of the

relationship between acne and anxiety, and those that did not report separate or extractable data for adolescents or young adults were excluded.

2.3 Study selection

Identification: Studies retrieved from the databases were exported to a spreadsheet, and duplicates were removed.

Screening: Titles and abstracts were assessed for relevance, and studies not meeting the inclusion criteria were excluded. Screening was conducted by two reviewers, and discrepancies were resolved by a third reviewer.

Eligibility: Articles considered potentially eligible were obtained in full text and assessed according to the inclusion and exclusion criteria.

Inclusion: Studies meeting all criteria were included in the review.

2.4 Risk of bias assessment

The methodological quality and risk of bias of the included studies were assessed using tools appropriate to each study design. Case–control studies were evaluated using the Newcastle–Ottawa Scale (NOS), which examines selection of participants, comparability between groups, and exposure assessment, with a maximum score of nine points. Cross-sectional studies were assessed using the Joanna Briggs Institute (JBI) Critical Appraisal Checklist for Analytical Cross-Sectional Studies, consisting of eight domains related to sample criteria, measurement validity, confounder control, and statistical analysis. Two reviewers independently conducted the risk of bias assessment, and disagreements were resolved through discussion and consensus. The results of these evaluations are presented in the Results section.

2.5 Data extraction

Data extracted from the included studies were organized in a table, including article title, authors, year, database, study type, and main findings. The analysis was descriptive and exploratory, allowing the identification of patterns of association between acne and anxiety, the most frequently used methodologies, convergences and divergences among findings, and gaps in the literature that may guide future research.

3. Results

The search conducted in scientific databases initially identified 36 articles related to the proposed topic. After removing 6 duplicate entries, 30 records remained for screening. During title and abstract screening, 10 records were excluded for not meeting the eligibility criteria. Of the 20 reports sought for retrieval, 6 were not retrieved. Fourteen full-text articles were assessed for eligibility, and 9 were excluded due to population outside the predefined age criteria (n = 2), ineligible outcome (n = 1), or inappropriate study design (n = 6). Ultimately, 5 studies met all inclusion criteria and were included in the final review, comprising a total of 2,544 participants across three case-control studies and two cross-sectional studies.

Figure 1 below presents the PRISMA flow diagram detailing the identification, screening, eligibility, and inclusion processes used for selecting the studies incorporated into this systematic review.

Figure 1 - PRISMA flow diagram of studies selected for data extraction.
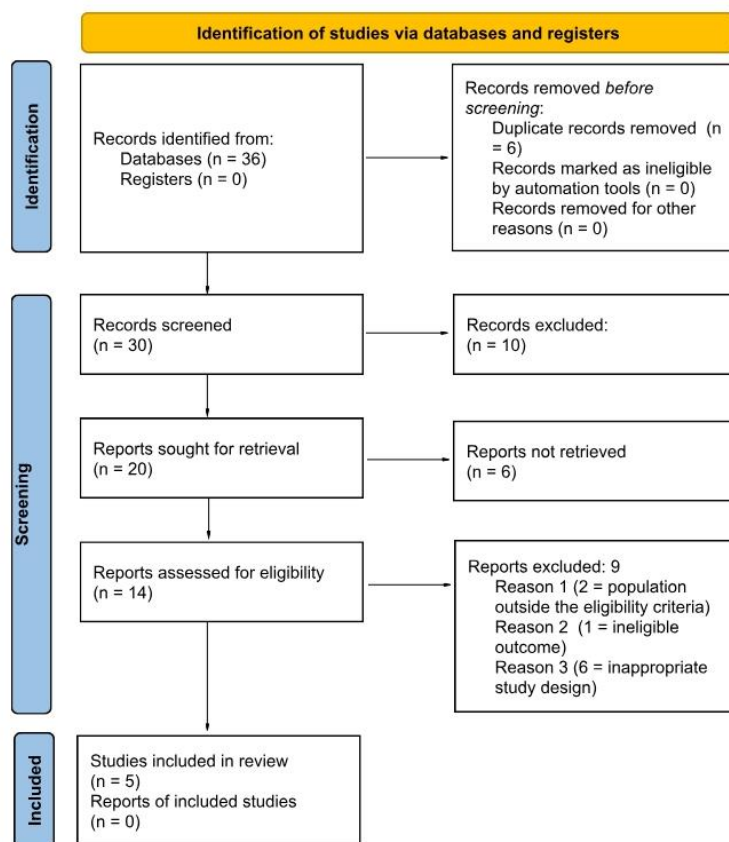
Source: Flow diagram adapted from the template provided by PRISMA (2020) and tailored to the study selection data conducted by the authors.

Table 1 presents the extracted data from the studies included in this review, detailing their titles, authors, year of publication, database of origin, study design, and the main findings related to the association between acne and anxiety.

Table 1 - Data extracted from the studies and main findings.

N	Name	Authors	Year	Database	Type of Study	Main findings
1	Anxiety Sensitivity and Quality of Life in Patients with Acne	Ersoy Acer, Ali Ercan Altınoz, Hilal Kaya Erdogan, Esra Agaoglu, Nihan Yuksel Canakcı, Zeynep Nurhan Saracoglu.	2019	PubMed	Case-Control	The data obtained in the study showed that patients with acne exhibited significantly higher levels of anxiety and anxiety sensitivity (AS) compared to healthy controls ($p < 0.001$). Higher anxiety and greater AS were associated with poorer quality of life in patients with acne ($p = 0.014$ and $p = 0.019$, respectively), regardless of the clinical severity of the disease ($p > 0.1$).
2	Assessment of Anxiety and Depression in Patients with Acne Vulgaris in Medina: A Case-Control Study	Amr Molla, Hassan Alrizqi, Emtinan Alharbi, Arwa Alsubhi, Saad Alrizqi, Omar Shahada.	2021	PubMed	Case-Control	In this case-control study, overall anxiety was significantly higher in the acne group compared to the control group ($p = 0.031$). Furthermore, anxiety and depression showed a strong correlation in the acne group ($r = 0.732$, $p < 0.001$). The study also highlighted the prevalence of these conditions among young individuals.

3	Prevalence of Anxiety, Depression, and Body Dysmorphic Disorders Among Dermatology Outpatients With Acne Vulgaris at a Public Hospital in Saudi Arabia	Khadijah H Muzaffar, Hadiza B Halilu, Baraatu A Dantata, Shawqi M Saati, Loai A Salah.	2024	PubMed	Cross-Sectional	In the data related to mental health, the study showed that young patients with acne vulgaris present significant symptoms of anxiety, which correlate with poorer quality of life regardless of acne severity, indicating the need for psychological evaluation during treatment.
4	The Impact of Common Acne on the Well-Being of Young People Aged 15-35 Years and the Influence of Nutrition Knowledge and Diet on Acne Development	Malgorzata Kostecka, Julianna Kostecka, Ola Szwed-Gułaga, Izabella Jackowska, Joanna Kostecka-Jarecka.	2022	PubMed	Cross-Sectional	The study involving 1,329 young individuals aged 15 to 30 years showed that anxiety was a frequent finding among those with acne, with moderate levels reported by 57% of women and 22.5% of men. The presence of facial acne was considered problematic by 81% of participants and was associated with a negative impact on emotional and social well-being, particularly among women (p = 0.0023).
5	The Relationship of Acne With Somatosensory Amplification, Health Anxiety, and Depression Levels	Işın Öncü, Gülhan Gürel, Ayşe Akkoyun.	2022	PubMed	Case-Control	The study demonstrated that patients with acne presented significantly higher scores of anxiety and depression compared to the control group. A positive association between depressive symptoms and anxiety was also observed, regardless of acne severity, age, or disease duration.

Source: Prepared by the authors after data extraction from the studies.

Table 2 presents the risk of bias assessment of the studies included in this systematic review, evaluated using the Newcastle–Ottawa Scale (NOS) for case–control studies and the Joanna Briggs Institute (JBI) Checklist for cross-sectional studies.

Table 2 - Risk of bias assessment.

Author (year)	Study design	Tool used	Score	Risk of bias	Notes
Acer et al. (2019)	Case–control	Newcastle–Ottawa Scale (NOS)	6/9	Moderate risk of bias	Some methodological limitations were present, including incomplete control of confounders and partial reporting of study procedures.
Molla et al. (2021)	Case–control	Newcastle–Ottawa Scale (NOS)	7/9	Low risk of bias	Well-defined cases and controls, adequate matching, and validated measures, though non-response information was not reported.
Muzaffar et al. (2024)	Cross-sectional	JBI Checklist	6/8	Low risk of bias	Appropriate sample and validated measures, though confounders were not identified or controlled.
Kostecka et al. (2022)	Cross-sectional	JBI Checklist	2/8	High risk of bias	Self-reported acne, non-representative sampling, and no control of confounders.

Öncü et al. (2022)	Case–control	Newcastle–Ottawa Scale (NOS)	5/9	Moderate risk of bias	Unclear control selection and no adjustment for confounders, but validated instruments were consistently applied.

Source: Prepared by the authors after data extraction from the studies.

Table 3 provides a comparative view of how frequently the main outcomes associated with acne were identified across the selected studies.

Table 3 - Frequency of main findings related to acne in adolescents and young adults.

Main findings	**Number of studies**
Association between acne and anxiety	5
Acne, anxiety, and depression	2
Negative impacts on quality of life	2
Gender differences	1

Source: Prepared by the authors after data extraction from the studies.

4. Discussion

The analysis of the studies included in this review consistently demonstrates the association between acne and anxiety symptoms in adolescents and young adults. Acne, in addition to being one of the most prevalent dermatological conditions in this age group, has significant psychosocial repercussions that extend beyond the clinical aspects of the skin, directly affecting the psychological and social well-being of individuals (Eichenfield et al., 2021). A key point highlighted in several investigations is that the intensity of anxiety symptoms does not correlate linearly with the clinical severity of acne. Acer et al. (2019) demonstrated that individuals with acne exhibited significantly higher levels of anxiety and anxiety sensitivity compared to the control group, regardless of the clinical severity of the disease. This finding suggests that subjective factors, such as self-image and perceived stigma, may play a more relevant role than objective dermatological characteristics, reinforcing the need to consider the individual psychosocial impact in patient care.

Moreover, the literature indicates that the association between acne and anxiety often coexists with depressive symptoms, forming a psychiatric comorbidity that exacerbates patient distress. In a case-control study conducted by Molla et al. (2021), anxiety and depression were significantly correlated, highlighting the need for an integrated assessment of emotional disorders in individuals with acne. Similar results were reported by Oncü, Gürel, and Akkoyun (2022), who identified higher anxiety and depression scores in acne patients, regardless of age, disease duration, or lesion severity. The impact of these emotional manifestations can extend to more severe outcomes, such as suicidal ideation. Hull and D'Arcy (2005) had previously shown that adolescents and young adults with acne have an increased risk of severe psychological distress, potentially leading to greater vulnerability to outcomes such as suicide. Complementarily, Saitta et al. (2011) highlighted the relationship between oral isotretinoin use and mood changes, indicating the need for psychological monitoring during pharmacological treatment, although there is debate regarding direct causality.

Another relevant aspect identified was the gender disparity in the psychosocial experience of acne. In the study by Kostecka et al. (2022), 57% of women reported moderate anxiety levels compared to 22.5% of men, indicating that sociocultural factors related to aesthetics and the social role of appearance may intensify emotional distress among female participants. Facial acne was considered problematic by 81% of participants, revealing the impact of lesion location on self-esteem and social

interactions. The prevalence of acne in adolescents and young adults further reinforces the importance of discussing the intersection between dermatology and mental health. Epidemiological studies show that up to 85% of individuals between 12 and 24 years of age experience acne at some point in life, and approximately 50% continue to have manifestations between 20 and 29 years (Eichenfield et al., 2021). In this context, the emotional impacts become even more significant, considering that this age group is characterized by intense identity, social, and affective changes.

The meta-analysis conducted by Samuels et al. (2020) identified a statistically significant association between acne vulgaris and anxiety symptoms (r = 0.25; 95% CI: 0.19–0.31; P < 0.00001), reinforcing that dermatological treatment of acne should also include psychological evaluation and follow-up. This integrated approach contributes to the improvement of patients' emotional well-being and also enables more positive clinical outcomes in dermatological treatment. Similarly, Muzaffar et al. (2024) demonstrated that anxiety in patients with acne vulgaris is directly correlated with poorer quality of life, in some cases independent of disease severity, indicating that the psychological dimension must be considered to provide comprehensive care. The literature also highlights the importance of understanding acne and its impacts as a biopsychosocial phenomenon. Habeshian and Cohen (2020) emphasize that therapeutic planning should consider not only the treatment of skin lesions but also the resulting emotional effects, as neglecting this dimension can compromise treatment adherence and effectiveness. This perspective broadens the traditional biomedical conception, bringing clinical practice closer to a more humanized interdisciplinary approach, in which collaboration between dermatology and psychology is essential to promote mental health and better clinical outcomes in patients undergoing acne treatment.

Despite the consistency of the findings, it is important to recognize the limitations present in the analyzed studies. Many works had a cross-sectional or case-control design, which precludes establishing causal relationships between acne and anxiety. Furthermore, methodological heterogeneity, both in the use of assessment scales and in sample characterization, hinders direct comparison of results. Nevertheless, the convergence of evidence across different cultural contexts and population samples strengthens the external validity of the identified association. Thus, the results discussed here suggest that acne should be understood as a health condition that transcends the dermatological dimension, significantly affecting the mental health of adolescents and young adults. Integration between dermatology and psychology, along with educational strategies and social support, emerges as fundamental for comprehensive and effective care. An expanded clinical approach, which considers both the physical and psychosocial aspects of the disease, is essential to minimize the negative impacts of acne on these individuals' lives and to promote greater quality of life.

5. Final Considerations

The high prevalence of acne, combined with its aesthetic impact, potential for permanent scarring, and psychosocial repercussions, establishes it as a significant public health concern in dermatology. Recent research has advanced understanding of acne pathophysiology, enabling the development of novel therapeutic perspectives. However, significant gaps remain regarding the relationship between acne and psychological distress, patient adherence to treatment, and the effectiveness of interventions that simultaneously target dermatological and emotional outcomes. The findings of this review consistently demonstrate a significant association between acne and anxiety, emphasizing the importance of a biopsychosocial approach in patient care. Nevertheless, the strength of the current evidence is limited by important methodological constraints, including the predominance of observational study designs, insufficient control of confounding variables, and variability in sampling strategies and outcome assessment. These limitations restrict the ability to infer causality or fully characterize the direction and magnitude of the relationship between acne and anxiety. Consequently, there is a clear need for more rigorous and methodologically robust studies, ideally incorporating standardized diagnostic criteria, representative samples, and appropriate multivariable analyses.

Such investigations are essential to refine the understanding of this association and to support the development of evidence-based clinical and psychosocial interventions. In conclusion, acne should be regarded as a dermatological condition of global relevance, whose management requires early diagnosis, appropriate clinical care, and attention to its effects on mental health, especially anxiety, in adolescents and young adults.

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