

PERCEIVED STRESS, ANXIETY AND SELF-CONFIDENCE AMONG ADOLESCENTS AND ADULTS WITH ACNE ATTENDING PRIMARY HEALTHCARE FACILITIES IN MULTAN, PAKISTAN

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ABSTRACT

This study examined perceived stress, anxiety and self-confidence among people with acne attending primary healthcare facilities in Multan, Pakistan, and whether stress differed by acne severity. In this cross-sectional study, 413 participants aged 10-35 years were recruited from Basic Health Units and Rural Health Centres by non-probability consecutive sampling. Perceived stress was measured with the Perceived Stress Scale (PSS-10) and acne severity with the Global Acne Grading System (GAGS). Most participants were female (70.70%) and rural (81.84%). Acne was mild in 49.15%, moderate in 39.95% and severe in 10.90%. Moderate or high perceived stress was reported by 92.01%, anxiety due to acne by 57.14% and at least mild loss of confidence by 73.37%; 31.00% avoided social gatherings. Perceived stress was not significantly associated with acne severity ($p = .497$). Psychological burden was high regardless of clinical severity. Brief psychosocial screening and supportive counselling should be integrated into primary care acne management.

I. INTRODUCTION

Acne vulgaris is a chronic inflammatory disease of the pilosebaceous unit that commonly affects adolescents and young adults. Although it is often regarded as a minor or self-limiting condition, its visible location on the face and upper body makes it a significant source of psychological distress. Patients with acne may experience reduced self-esteem, embarrassment, anxiety, social withdrawal and impaired quality of life (Uslu et al., 2008; Shahzad et al., 2022). The relationship between acne and psychological stress is thought to be bidirectional. Psychological stress can worsen acne through neuroendocrine pathways, including activation of the hypothalamic-pituitary-adrenal axis and cortisol-related stimulation of sebaceous glands and inflammation (Seetan et al., 2023). At the same time, living with a visible skin condition can increase stress, anxiety and avoidance of social situations. Previous literature also suggests that the psychological burden of acne often correlates poorly with its objective clinical severity, so patients with mild disease may still experience marked distress (Naveed et al., 2021; Uslu et al., 2008). Most research on acne in Pakistan has been conducted in tertiary care and specialist dermatology settings (Tahir et al., 2025). Evidence from primary healthcare facilities, such as Basic Health Units (BHUs) and Rural Health Centres (RHCs), where many patients first seek care, is limited. This is a concern because primary care providers are rarely equipped to screen for psychosocial distress in patients with acne. Understanding the psychological profile of these patients is a necessary first step towards integrating mental well-being support into primary care.

Acne also carries a practical burden in healthcare delivery. Patients often delay seeking professional care, rely on home remedies or over-the-counter products, and obtain advice from family, friends or social media before consulting a clinician. These behaviours may prolong the disease, increase the risk of scarring, and add to the emotional strain that patients already experience. In settings with limited dermatology services, such as Southern Punjab, primary healthcare facilities are therefore central to early identification and management. Despite this, routine acne care at primary level generally focuses on lesion treatment, with little attention to psychological well-being. Documenting the extent of stress, anxiety and loss of confidence among primary care patients, and examining whether these relate to clinical severity, can help determine whether psychosocial screening should be offered to all patients with acne or only to those with more severe disease.

Perceived Stress and Acne

Perceived stress refers to the degree to which situations in one's life are appraised as stressful, unpredictable and overwhelming. In acne, higher perceived stress has been reported alongside acne flares and poorer sleep, and stress is commonly cited by patients as a trigger for worsening of their skin (Seetan et al., 2023). However, few studies have examined perceived stress using a standardised measure among patients with acne attending primary care in Southern Punjab.

Psychosocial Impact of Acne

The psychosocial impact of acne includes anxiety, reduced confidence, embarrassment and avoidance of social gatherings. Studies among young adults in Pakistan have reported low self-esteem, social avoidance and anxiety as consequences of acne (Shahzad et al., 2022). Because psychosocial effects are not determined only by lesion count or severity grade (Uslu et al., 2008), assessing them separately from clinical grading is important in routine care. The objectives of the present study are given below:

1. To assess the distribution of acne severity among adolescents and adults attending primary healthcare facilities in Multan.
2. To describe perceived stress, anxiety, self-confidence and social avoidance among these patients.
3. To examine whether perceived stress differs across acne severity categories.

II. METHOD

Participants

A cross-sectional survey design was used. The sample comprised 413 individuals with clinically diagnosed acne vulgaris, aged 10-35 years, attending Basic Health Units (BHUs) and Rural Health Centres (RHCs) in Multan, Pakistan. Participants were recruited through non-probability consecutive sampling. Of the participants, 70.70% (n = 292) were female and 29.30% (n = 121) were male. By age, 9.44% (n = 39) were 10-19 years, 49.39% (n = 204) were 20-25 years and 41.16% (n = 170) were 26-35 years. Most participants lived in rural areas (81.84%, n = 338). Regarding education, 38.01% had intermediate education or below, 33.41% were undergraduates, 23.97% were graduates and 4.60% were postgraduates.

Measures

The following measures were used for data collection. **[I]** A pre-tested bilingual (English and Urdu) questionnaire was used to collect socio-demographic characteristics and clinical history, including duration of acne, history of scarring and acne flares during stress. **[II]** Perceived stress was measured using the Perceived Stress Scale (PSS-10) (Cohen et al., 1983). The PSS-10 contains 10 items rated from 0 (never) to 4 (very often), giving total scores from 0 to 40. Scores were categorised as low (0-13), moderate (14-26) or high (27-40) perceived stress. **[III]** Acne severity was graded by the researcher during clinical assessment using the Global Acne Grading System (GAGS) (Doshi et al., 1997), in the form used in the study protocol. Five facial regions were scored (forehead, right cheek and left cheek, each weighted 2; nose and chin, each weighted 1). In each region a lesion score was assigned according to the most severe lesion type present (0 = no lesion, 1 = comedone, 2 = papule, 3 = pustule) and multiplied by the region weight, and the products were summed to give the total score. Total scores of 0-5 were classified as mild, 6-11 as moderate and 12-19 as severe. **[IV]** Psychosocial impact was assessed using three questionnaire items: the

effect of acne on confidence (not at all, mildly, moderately or severely affected), avoidance of social gatherings because of acne (yes/no) and anxiety due to acne (yes/no).

Procedure

Permission was obtained from the relevant health authorities and participating facilities. Participants gave informed consent before data collection. Confidentiality and voluntary participation were ensured. Data were analysed using SPSS version 26.0. Frequencies and percentages were calculated for categorical variables. Pearson's chi-square test of independence was used to examine the association between categorical variables and acne severity, and a p-value of .05 or below was considered statistically significant.

III. RESULTS

Table II: Socio-demographic Characteristics of Participants (N = 413)

Variable	Category	n	%
Gender	Male	121	29.30
	Female	292	70.70
Age group	10-19 years	39	9.44
	20-25 years	204	49.39
	26-35 years	170	41.16
Residence	Urban	75	18.16
	Rural	338	81.84
Education	Intermediate or below	157	38.01
	Undergraduate	138	33.41
	Graduate	99	23.97
	Postgraduate	19	4.60

The socio-demographic characteristics of the 413 participants are presented in Table 1. Most participants were female (70.70%), rural residents (81.84%) and young adults aged 20-35 years (90.56%).

Table II: Acne Severity, Clinical Characteristics and Perceived Stress (N = 413)

Variable	Category	n	%
Acne severity (GAGS)	Mild	203	49.15
	Moderate	165	39.95
	Severe	45	10.90
Duration of acne	Less than 6 months	110	26.63
	6 months-1 year	86	20.82
	1-3 years	140	33.90
	More than 3 years	77	18.64
History of acne scarring	Yes	124	30.02
	No	289	69.98
Acne flares during stress	Yes	233	56.42
	No	180	43.58
PSS-10 stress level	Low	33	7.99
	Moderate	345	83.54
	High	35	8.47

Table 2 shows that mild acne was the most common severity grade (49.15%), followed by moderate (39.95%) and severe (10.90%) acne. Over half of the participants (52.54%) had acne for more than one year, and 30.02% reported a history of scarring. Most participants experienced moderate (83.54%) or high (8.47%) perceived stress, and only 7.99% reported low stress. Acne flares during stressful periods were reported by 56.42% of participants.

Table III: Psychosocial Impact of Acne (N = 413)

Variable	Category	n	%
Effect on confidence	Not at all affected	110	26.63
	Mildly affected	140	33.90
	Moderately affected	119	28.81
	Severely affected	44	10.65
Avoids social gatherings	Yes	128	31.00
	No	285	69.00
Anxiety due to acne	Yes	236	57.14
	No	177	42.86

As shown in Table 3, 73.37% of participants reported at least mild loss of confidence, including 39.47% who were moderately or severely affected. Anxiety due to acne was reported by 57.14%, and 31.00% avoided social gatherings because of their acne.

Table IV: Association of Perceived Stress with Acne Severity (N = 413)

PSS-10 stress level	Mild n (%)	Moderate n (%)	Severe n (%)	χ^2	df	p
Low (n = 33)	13 (6.4)	16 (9.7)	4 (8.9)	1.398	2	.497
Moderate/High (n = 380)	190 (93.6)	149 (90.3)	41 (91.1)			

Note. Values are n (% within each severity group). Moderate and high stress were combined because only 33 participants had low stress. GAGS severity: mild = 0-5, moderate = 6-11, severe = 12-19.

Chi-square analysis showed no significant association between perceived stress level (low vs moderate/high) and acne severity, $\chi^2(2) = 1.398$, $p = .497$. Moderate or high stress was common in all severity groups (93.6% in mild, 90.3% in moderate and 91.1% in severe acne). Among the other factors examined, acne picking or squeezing, reported by 50.12% of participants, was the only factor significantly associated with severity, $\chi^2(2) = 7.144$, $p = .028$; picking was reported by 44.8% of participants with mild acne, 58.2% with moderate acne and 44.4% with severe acne. Gender, family history, smoking, dietary habits, dust or pollution exposure, sleep duration, cosmetic use, acne scarring and home remedy use were not significantly associated with severity (p -values from .050 to .807).

IV.DISCUSSION

This study examined perceived stress, anxiety and self-confidence among adolescents and adults with acne attending primary healthcare facilities in Multan. The main finding was a high psychological burden: 92.01% of participants reported moderate or high perceived stress, 57.14% reported anxiety due to acne, and 73.37% reported at least mild loss of confidence. These findings are consistent with studies among young adults in Pakistan that reported low self-esteem, social avoidance and anxiety as consequences of acne (Shahzad et al., 2022). Perceived stress was not significantly associated with acne severity ($p = .497$), and moderate or high stress was similarly common in the mild, moderate and severe groups. This is in line with earlier literature suggesting that psychological distress in acne is poorly explained by clinical severity alone (Naveed et al., 2021; Uslu et al., 2008), and implies that patients with mild acne should not be assumed to be free of distress. However, the result should be interpreted cautiously, because only 7.99% of participants had low stress, and this limited variability reduces the ability to detect a difference between groups. More than half of the participants (56.42%) reported that their acne flared during stressful periods. This supports the proposed link between stress and acne through neuroendocrine and inflammatory pathways (Seetan et al., 2023), although the cross-sectional design cannot show whether stress worsens acne, acne increases stress, or both. The behavioural findings are also relevant: 50.12% of participants reported picking or squeezing their lesions, and this was the only factor significantly associated with acne severity in this sample ($p = .028$), with picking being more common in moderate than in mild acne. Lesion picking is often linked to distress and may be both a result of, and a contributor to, worse acne.

Nearly one in three participants (31.00%) avoided social gatherings, and 39.47% reported moderate or severe impairment of confidence, even though about half had mild acne. These findings suggest that psychosocial assessment should be offered across the whole severity range. Because primary healthcare facilities are often the first point of care, they are well placed to provide brief screening and supportive counselling. Help-seeking and coping behaviour provide further context for these findings. Self-medication was common, with 41.16% of participants using over-the-counter creams, 40.68% using home remedies and 20.82% using steroid or formula creams, while only 23.00% relied on a doctor for treatment advice and 64.41% relied on self-advice, friends and family, or social media. Where distress is high and professional guidance is limited, patients may turn to unverified products in an effort to regain control over their appearance, which in turn may worsen skin outcomes and sustain the cycle of distress. This highlights the potential value of a supportive clinical consultation as a first point of psychological support. Sleep-related behaviours may also be relevant to stress and well-being in this population. Nearly half of the participants (46.00%) reported feeling sleep-deprived and 52.30% used a mobile phone before sleep. Poor sleep and evening screen use are plausible contributors to higher perceived stress and to the neuroendocrine pathways linking stress and acne (Seetan et al., 2023). Although these behaviours were not tested against stress in this study, they are modifiable and could be addressed as part of brief behavioural counselling in primary care. The age and gender profile of the sample should also be considered. Most participants were young adults, a stage of life in which appearance, peer acceptance and social participation carry particular importance. The sample was also predominantly female (70.70%), and women may be more likely to seek care for acne or to report appearance-related distress. Gender differences in anxiety and confidence were not examined in this study, so the findings may not apply equally to men.

Implications for Practice

The findings have several implications for primary care. First, brief psychosocial screening, for example two or three questions on confidence, anxiety and social avoidance, can be added to the routine acne consultation at BHUs and RHCs at minimal cost. Second, clinicians should avoid assuming that mild acne means mild distress, since moderate or high stress was common even among patients with mild disease. Third, counselling should address modifiable behaviours, including lesion picking, unsupervised use of creams and steroid products, and sleep and screen habits. Fourth, patients who screen positive for significant distress should receive supportive counselling and, where needed, referral to mental health services. Finally, training primary care providers and community health workers to recognise the psychological aspects of acne could improve both treatment engagement and patient well-being.

Strengths and Limitations

The strengths of this study include a relatively large sample drawn from primary care facilities, the use of a standardised stress measure (PSS-10) and a structured severity grading (GAGS), and the inclusion of a rural, Southern Punjab population that is under-represented in acne research. Limitations include the cross-sectional design, which prevents conclusions about causal direction between stress and acne, and the use of unadjusted chi-square tests without multivariable analysis. Severity was graded with a five-region version of GAGS and lesion scores of 0-3, so comparison with studies using the original six-region scale and its cut-offs should be made with caution. Anxiety and confidence were assessed with brief questionnaire items and not validated scales, and all psychosocial measures were self-reported, so recall and social desirability bias are possible. Perceived stress was analysed in two categories because very few participants had low stress, which limited the comparison. Participants were recruited from selected facilities in one district through non-probability sampling, and the sample was predominantly female and rural, which limits generalisability. Future studies should use validated measures of anxiety, depression and self-esteem, examine differences by gender and severity, and use longitudinal designs to clarify the direction of the relationship between stress and acne.

V. CONCLUSION

The study findings show a high burden of perceived stress, anxiety and reduced self-confidence among adolescents and adults with acne attending primary healthcare facilities in Multan. Perceived stress was common across all levels of acne severity and was not significantly associated with severity, which suggests that

psychological distress should be assessed in all patients with acne, including those with mild disease. Brief psychosocial screening and supportive counselling, together with counselling against lesion picking, should be considered part of acne management in primary care. To strengthen future work, studies should use validated psychological measures, include participants from more districts and use longitudinal designs.

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