

Original article

Seborrheic Dermatitis in Medical Students: Prevalence, Severity, and Psychosocial Correlates

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Abstract

Introduction: Seborrheic dermatitis is a chronic inflammatory skin condition with increased prevalence in high-stress populations. This study aimed to determine the prevalence, clinical severity, and psychosocial correlates of seborrheic dermatitis among medical students. **Materials and Methods:** A cross-sectional analytical study was conducted among 435 undergraduate medical students from five medical colleges in Sylhet, Bangladesh (Jalalabad Ragib-Rabeya Medical College, Sylhet M.A.G Osmani Medical College, Sylhet Women's Medical College, North East Medical College, and Parkview Medical College), spanning all academic years from first year through internship using validated instruments: Seborrheic Dermatitis Area and Severity Index (SDASI), Perceived Stress Scale (PSS-10), Beck Anxiety Inventory (BAI), Pittsburgh Sleep Quality Index (PSQI), and Dermatology Life Quality Index (DLQI). Statistical analysis included descriptive statistics, Spearman correlation, and multivariate logistic regression using SPSS 27.0. **Results:** Current seborrheic dermatitis prevalence was 41.8% (95% CI: 37.1-46.5%), with 71.7% reporting symptoms in the past year. Mean SDASI was 4.15±1.95, with 59.3% mild, 34.1% moderate, and 6.6% severe disease. The scalp (90.7%) and nasolabial folds (45.1%) were most affected. Students with seborrheic dermatitis had significantly higher stress (24.8±5.2 vs 18.5±4.8; p<0.001) and anxiety levels. Common triggers included stress/examinations (89.0%) and sleep deprivation (79.7%). Mean DLQI was 8.34±4.85, with 61.5% reporting moderate to very large quality of life impact. Quality of life correlated more strongly with anxiety (r=0.485) and stress (r=0.421) than clinical severity (r=0.295). Independent predictors included family history (AOR=3.49), high stress (AOR=2.51), oily skin (AOR=2.34), and male sex (AOR=2.18). **Conclusion:** Seborrheic dermatitis is highly prevalent among medical students and strongly associated with psychological stress and sleep disturbances. The disproportionate quality of life impact relative to clinical severity emphasizes the need for a biopsychosocial management approach. Medical institutions should implement comprehensive support addressing dermatological health, stress management, and sleep hygiene.

Keywords: *Seborrheic dermatitis; Medical students; Psychological stress; Sleep quality; Quality of life; Prevalence; Brain-skin axis*

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Introduction

Seborrheic dermatitis (SD) is a chronic, relapsing inflammatory skin disorder characterized by erythematous plaques with greasy, yellowish scales affecting sebaceous-rich areas including the scalp, face, and chest.¹ While benign, its chronic nature significantly impacts quality of life, particularly in populations where appearance and social perception are critical.^{2,3}

The general adult prevalence ranges from 1-5%, though milder forms affect up to 50% of individuals.⁴ Recent meta-analyses report a global prevalence of 4.38%, with regional variations from 2.62% in India to 8.82% in South Africa.⁵ Notably, medical students show significantly higher prevalence (30-40%), suggesting unique stress-related factors.⁶ The disease exhibits bimodal distribution, peaking in infancy and young adulthood (18-30 years),

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coinciding with medical student demographics.⁷

The pathophysiology involves *Malassezia* yeast species, particularly *M. globosa* and *M. restricta*, which produce lipases that convert sebum into pro-inflammatory fatty acids.^{8,9} These fatty acids trigger inflammatory cascades involving IL-1, IL-6, IL-8, and TNF- α , resulting in characteristic erythema and scaling.¹⁰

Psychological stress and sleep deprivation, common among medical students, significantly influence this inflammatory process through the Brain-Skin Axis.¹¹ Stress activates the hypothalamic-pituitary-adrenal (HPA) axis, releasing cortisol and neuropeptides like Substance P, which induces sebaceous gland hypertrophy and increases lipid production.¹² Similarly, the Sleep-Skin Axis suggests that chronic sleep deprivation disrupts cutaneous immunity, barrier function, and circadian rhythms.^{13,14} Medical students face unique challenges including demanding schedules, night shifts, and examination stress, creating conditions favorable for dermatological disease onset and persistence.¹⁵

Despite high prevalence and visibility, the psychological burden of seborrheic dermatitis remains understudied in high-stress populations. Medical students represent a particularly vulnerable group due to the convergence of chronic academic stress, sleep deprivation, and lifestyle disruptions inherent to medical training—conditions known to exacerbate inflammatory skin diseases through the Brain-Skin Axis. Yet, no study has comprehensively evaluated the interplay of clinical severity, psychological distress, sleep quality, and quality of life in this population. Understanding these relationships is essential for developing targeted, evidence-based interventions that address not only the dermatological manifestations but also the underlying psychosocial contributors. This study therefore aimed to determine the prevalence, clinical severity, and psychosocial and sleep-related correlates of seborrheic dermatitis among undergraduate medical students, providing evidence for targeted interventions.

MATERIALS AND METHODS

Study Design and Setting

A cross-sectional analytical study was conducted among undergraduate medical students enrolled across five medical colleges in Sylhet, Bangladesh: Jalalabad Ragib-Rabeya Medical College, Sylhet M.A.G Osmani Medical College, Sylhet Women's Medical College, North East Medical College, and Parkview Medical College. The study spanned all academic years from first year through internship. This design was selected for its ability to assess prevalence and generate hypotheses regarding associations.¹⁶

Sample Size and Sampling

Sample size was calculated using $n = Z^2pq/d^2$, where $Z=1.96$ (95% confidence), $p=0.40$ (expected prevalence),⁶ $q=0.60$, and $d=0.05$ (margin of error), yielding 369 participants. With 15% contingency for non-response, the minimum target sample size was 425. All eligible students were invited to participate, and a total of 435 students provided complete, valid responses, exceeding the minimum required sample. Stratified random sampling ensured representation across all academic years.

Inclusion and Exclusion Criteria

Inclusion: Medical students aged ≥ 18 years providing informed consent. Exclusion: Known immunosuppression (HIV, chemotherapy, long-term systemic corticosteroids), other inflammatory skin conditions, or lack of consent.¹

Data Collection Instruments

A structured, self-administered questionnaire incorporating validated, symptom-based criteria was used to assess seborrheic dermatitis presence and severity. The use of a self-administered instrument is a well-established approach in dermatological epidemiology, particularly where large-scale clinical examination is not feasible.¹⁶ Seborrheic dermatitis has highly recognizable features—including characteristic scaling and erythema in sebum-rich areas—that allow reliable self-identification based on standardized symptom descriptions. This approach has been validated in prior studies among medical and general student populations.⁶ Furthermore, medical students, even those in pre-clinical years, have sufficient exposure to basic anatomy, physiology, and pathology to recognize and report standardized dermatological symptoms with acceptable accuracy. The questionnaire comprised eight sections:

Section A - Sociodemographic Data: Age, sex, academic year, residence, marital status, skin type, BMI (calculated using WHO criteria).¹⁹

Section B - Seborrheic Dermatitis History: 12-month history, anatomical locations, age of onset, triggers, family history, current symptoms (past 4 weeks). Current SD was defined as symptoms (scaling/redness) in standard locations within 4 weeks.⁴

Section C - Clinical Severity (SDASI): Five clinical parameters (itching, scaling, erythema, oily appearance, burning/irritation) rated 0-3 (none to severe), plus activity level and flare frequency. Maximum score 12.6: mild (0-4.2), moderate (4.3-8.4), severe (8.5-12.6).¹²

Section D - Medical History: Comorbidities, medications, tobacco/alcohol use, hygiene practices, screen time, physical activity.

Section E - Psychosocial Assessment: PSS-10 (perceived stress, scores 0-40, ≥ 27 indicates high stress)²⁰ and BAI (anxiety symptoms, scores 0-63: minimal 0-7, mild 8-15, moderate 16-25, severe 26-63).²¹

Section F - Sleep Assessment: PSQI-adapted components assessing sleep duration, quality, latency, awakenings (global score >5 indicates poor sleep quality),²² and ESS (excessive daytime sleepiness, score ≥ 10 indicates abnormal sleepiness).²³

Section G - Quality of Life (DLQI): 10-item questionnaire assessing skin disease impact on daily life (0-30 scale: 0-1 no effect, 2-5 small, 6-10 moderate, 11-20 very large, 21-30 extremely large effect).^{24,25}

Data Collection Procedure

The questionnaire was pilot-tested on 30 students and refined based on feedback. Data collection used paper and electronic formats, requiring 15-20 minutes completion time. Questionnaires with $>10\%$ missing data were excluded.

Statistical Analysis

SPSS 27.0 (IBM Corporation, Armonk, NY) was used for analysis. Descriptive statistics included frequencies/percentages (categorical data) and means \pm SD or medians with IQR (continuous data). Normality was assessed using Kolmogorov-Smirnov test and visual inspection.

Prevalence was estimated with 95% CI. Bivariate analyses used chi-square or Fisher's exact test (categorical variables) and independent t-tests or Mann-Whitney U test (continuous variables). Spearman correlation assessed relationships between SDASI, DLQI, PSS, and BAI scores.²⁶

Binary logistic regression identified independent predictors of current seborrheic dermatitis. Variables with $p < 0.05$ in bivariate analysis entered the multivariate model. Results were expressed as adjusted odds ratios (AOR) with 95% CI. Model fit was assessed using Hosmer-Lemeshow test and Nagelkerke R^2 . Multicollinearity was evaluated using variance inflation factors ($VIF > 5$ problematic). Two-tailed $p < 0.05$ was considered significant.

Ethical Considerations

The Institutional Review Board approved the study protocol. Research followed Declaration of Helsinki principles.²⁷ Informed consent was obtained from all participants, ensuring voluntary participation, confidentiality, and right to withdraw. Students with significant distress were referred to institutional support services.

RESULTS

Participant Characteristics

A total of 435 medical students completed the questionnaire (mean age 21.8 ± 2.4 years). Female students comprised 55.9%, with 73.1% residing in on-campus hostels. Over 70% reported oily (28.7%) or combination (41.8%) skin types. Most (60.2%) had normal BMI, while 26.4% were overweight and 9.2% obese (Table 1).

Table 1: Socio-demographic and Academic Characteristics (N = 435)

Variable	Frequency (n)	Percentage (%)
Sex		
Male	192	44.1
Female	243	55.9
Academic Year		
1st Year	95	21.8
2nd Year	88	20.2
3rd Year	82	18.9
4th Year	75	17.2
5th Year/Final	65	14.9
Internship	30	6.9
Residence during Term		
On-campus Hostel	318	73.1
Off-campus Rental	42	9.7
With Family	75	17.2
Self-reported Skin Type		
Oily	125	28.7
Combination	182	41.8
Normal	85	19.5
Dry	43	9.9
Body Mass Index		
Underweight (< 18.5)	18	4.1
Normal (18.5-24.9)	262	60.2
Overweight (25.0-29.9)	115	26.4
Obese (≥ 30.0)	40	9.2

Prevalence

History of seborrheic dermatitis within 12 months: 71.7% (95% CI: 67.4-76.0%). Current seborrheic dermatitis: 41.8% (95% CI: 37.1-46.5%). Previous doctor diagnosis: 22.5%. Family history: 26.4% (Table 2).

Table 2: Prevalence of Seborrheic Dermatitis

Prevalence Metric	n	%	95% CI
History of SD (12 months)	312	71.7	67.4-76.0
Current SD	182	41.8	37.1-46.5
Doctor-Diagnosed SD	98	22.5	18.6-26.4
Family History of SD	115	26.4	22.3-30.6

The gap between self-reported history and professional diagnosis indicates significant self-treatment without dermatological consultation.

Clinical Severity and Distribution

Among 182 symptomatic students, mean SDASI was 4.15±1.95. Severity distribution: 59.3% mild, 34.1% moderate, 6.6% severe. Leading symptoms: pruritus (2.25±0.92), scaling (2.12±0.85), erythema (1.85±0.72), minimal infiltration (0.52±0.41) (Table 3).

Table 3: Clinical Severity Parameters (n = 182)

Clinical Parameter	Mean Score	SD	Maximum
Erythema	1.85	0.72	4.0
Scaling	2.12	0.85	4.0
Infiltration	0.52	0.41	4.0
Pruritus	2.25	0.92	3.0
Total SDASI	4.15	1.95	12.6

Severity Classification: - Mild (0-4.2): 108 (59.3%) - Moderate (4.3-8.4): 62 (34.1%) - Severe (8.5-12.6): 12 (6.6%)

Anatomical distribution: scalp/hairline (90.7%), nasolabial folds (45.1%), eyebrows/glabella (35.2%), ears (24.7%), chest (9.9%) (Table 4).

Table 4: Anatomical Distribution of Lesions (n = 182)

Affected Anatomical Site	Frequency (n)	Percentage (%)
Scalp/Hairline	165	90.7
Nasolabial Folds/Sides of Nose	82	45.1
Eyebrows/Glabella	64	35.2
Ears (Canal/Behind Ears)	45	24.7
Chest/Presternal Area	18	9.9
Other (Upper Back/Skin Folds)	12	6.6

Trigger Factors

Common triggers: stress/examinations (89.0%), sleep deprivation (79.7%), cold weather (64.8%), sweating with helmet/hijab/cap (34.1%), hair oils (26.4%), new skincare products (12.1%).

Psychosocial Correlates

Students with seborrheic dermatitis showed significantly higher stress (PSS: 24.8±5.2 vs 18.5±4.8; p<0.001) and anxiety (BAI: 18.2±8.5 vs 12.4±6.2; p<0.001). Moderate-severe anxiety: 45.6% (SD group) vs 22.5% (non-SD); p<0.001.

Correlation analysis (Table 5):

Table 5: Correlation Analysis (n = 182)

Correlation Pair	ρ	p-value	Interpretation
SDASI vs PSS	0.392	<0.001	Moderate positive
SDASI vs BAI	0.145	0.052	Not significant
DLQI vs BAI	0.485	<0.001	Moderate positive
DLQI vs PSS	0.421	<0.001	Moderate positive
DLQI vs SDASI	0.295	<0.001	Weak positive

SDASI vs PSS (ρ=0.392, p<0.001); DLQI vs BAI (ρ=0.485, p<0.001); DLQI vs PSS (ρ=0.421, p<0.001); DLQI vs SDASI (ρ=0.295, p<0.001). Quality of life correlated more strongly with psychological factors than clinical severity.

Sleep-Related Correlates

79.1% of symptomatic students had poor sleep quality (PSQI>5). Sleep parameters: mean duration 5.8±1.2 hours, bedtime 11:45 PM±1.5 hours, wake time 6:15 AM±1.2 hours. Sleep-deprived students (<6 hours) had higher seborrheic dermatitis prevalence (52.3% vs 34.1%; p<0.001). Excessive daytime sleepiness (ESS≥10): 68.7% in SD group vs 41.2% in non-SD group (p<0.001).

Quality of Life Impact

Mean DLQI: 8.34±4.85. Impact distribution: 61.5% moderate to very large, 28.6% small, 9.9% no effect. Most affected domains: symptoms/feelings (mean 2.4±0.8), embarrassment (mean 2.1±0.9), daily activities (mean 1.8±0.7).

Independent Predictors

Multivariate logistic regression identified independent predictors (Table 6):

Table 6: Independent Predictors (Multivariate Analysis)

Predictor	AOR	95% CI	p-value
Family History	3.49	2.18-5.58	<0.001
High Perceived Stress	2.51	1.60-3.93	<0.001
Oily Skin Type	2.34	1.52-3.60	<0.001
Male Sex	2.18	1.41-3.37	<0.001
Poor Sleep Quality	1.91	1.25-2.92	0.003
Hostel Residence	1.68	1.08-2.61	0.021
High Screen Time (≥6 hrs/day)	1.46	1.02-2.09	0.038

family history (AOR=3.49; 95% CI: 2.18-5.58), high perceived stress (AOR=2.51; 95% CI: 1.60-3.93), oily skin (AOR=2.34; 95% CI: 1.52-3.60), male sex (AOR=2.18; 95% CI: 1.41-3.37), poor sleep quality (AOR=1.91; 95% CI: 1.25-2.92), hostel residence (AOR=1.68; 95% CI: 1.08-2.61), high screen time (AOR=1.46; 95% CI: 1.02-2.09).

DISCUSSION

This study demonstrates that seborrheic dermatitis is highly prevalent among medical students (41.8% current, 71.7% within 12 months), substantially exceeding the 1-5% general population prevalence.^{4,5} This positions medical students as a remarkably vulnerable group, likely due to unique stressors inherent to medical training.

The predominantly mild-moderate clinical severity (mean SDASI 4.15±1.95) with scalp and facial predominance aligns with classical descriptions.^{1,7} However, the striking finding is the psychological disconnection between clinical severity and quality of life impact. While DLQI correlated weakly with SDASI ($r=0.295$), it showed stronger correlations with anxiety ($r=0.485$) and stress ($r=0.421$). This indicates that psychological state, rather than objective disease severity, primarily drives perceived disease burden—a finding with significant management implications.

The strong associations with psychological stress and sleep disturbances support the Brain-Skin and Sleep-Skin Axis theories.^{11,13} Students with seborrheic dermatitis demonstrated significantly elevated stress (PSS 24.8±5.2 vs 18.5±4.8) and anxiety levels, with 89% identifying stress/examinations as primary triggers. The finding that 79.1% of symptomatic students had poor sleep quality (PSQI>5), with sleep deprivation as the second-most common trigger (79.7%), underscores sleep's critical role.

Family history emerged as the strongest predictor (AOR=3.49), confirming genetic susceptibility.¹ Importantly, modifiable factors including high stress (AOR=2.51) and poor sleep quality (AOR=1.91) offer intervention targets. The higher prevalence in males (AOR=2.18) aligns with literature suggesting androgen-mediated sebum production increases vulnerability.⁸ Hostel residence (AOR=1.68) likely reflects shared facilities, irregular routines, and peer stress amplification.

The gap between symptom history (71.7%) and professional diagnosis (22.5%) reveals significant underutilization of dermatological care, possibly due to self-diagnosis, perceived stigma, or time constraints. This highlights the need for accessible campus dermatological services and health literacy programs.

Clinical and Educational Implications

These findings mandate a biopsychosocial management approach addressing cutaneous manifestations, psychological stressors, and sleep disturbances. For clinicians, screening medical students with seborrheic dermatitis for stress and anxiety is essential. For institutions, integrating dermatological health into student wellness programs, providing mental health support, and reconsidering examination-related stress are critical interventions.

Strengths and Limitations

Strengths include adequate sample size ($n=435$), validated instruments (PSS-10, BAI, PSQI, DLQI), comprehensive assessment, and multivariate analysis controlling confounders. However, the cross-sectional design precludes causal inference. Self-reported symptoms may introduce misclassification bias, though standardized criteria mitigate this. The multi-college setting within a single city (Sylhet, Bangladesh) enhances internal consistency but may limit broader national and international generalizability. Subjective sleep assessment lacks polysomnographic objectivity.

Future Research

Longitudinal studies tracking stress, sleep, and disease exacerbations would establish causality. Intervention studies evaluating combined dermatological-psychological approaches and biomarker studies investigating molecular stress-inflammation pathways would advance understanding. Multi-center studies across geographic and cultural contexts would enhance generalizability. Qualitative research exploring lived experiences would inform intervention design.

CONCLUSION

Seborrheic dermatitis affects this study demonstrates that seborrheic dermatitis is highly prevalent among medical students, at rates substantially exceeding those observed in the general population. Although the clinical presentation was predominantly mild-to-moderate in severity, quality of life impact was disproportionately large and was driven more strongly by psychological factors—particularly anxiety and perceived stress—than by objective disease severity. This psychological disconnection underscores that seborrheic dermatitis in medical students represents more than a dermatological condition; it reflects the broader intersection of skin disease with the psychological and lifestyle demands inherent to medical training.

The identification of both non-modifiable risk factors (family history, male sex) and modifiable determinants (high perceived stress, poor sleep quality, hostel residence, prolonged screen time) confirms the multifactorial nature of seborrheic dermatitis in this population and provides clear, actionable targets for prevention and intervention.

Management requires shifting from purely dermatological approaches to comprehensive biopsychosocial care addressing cutaneous manifestations, psychological stressors, and sleep disturbances. Medical institutions must integrate dermatological health into student wellness frameworks, provide accessible mental health services, and examine curricula for stress reduction opportunities. The gap between symptom prevalence (71.7%) and professional diagnosis (22.5%) necessitates increased awareness and health-seeking behavior promotion.

Addressing seborrheic dermatitis in medical students extends beyond individual well-being to ensuring future physicians' capacity to provide compassionate, competent care. Collaboration among dermatologists, mental health providers, and academic administrators is essential to create healthier learning environments for future healthcare professionals.

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