https://doi.org/10.29309/TPMJ/2026.33.06.10435 www.theprofesional.com

ORIGINAL ARTICLE

Factors associated with dermatology life quality index scores in children with chronic skin disorders: A cross-sectional analytical study.

Aamina Iqbal[1], **Asfa Ahmad**[2]

ABSTRACT… Objective: To identify factors associated with dermatology specific quality of life impairment in children with chronic skin conditions. **Study Design:** Cross Sectional Analytical study. **Setting:** Pediatric Dermatology Clinic in Multan. **Period:** January–December 2025. **Methods:** Enrolled 381 children aged 4–18 years with physician confirmed chronic dermatoses Participants completed age-appropriate quality of life instruments (CDLQI for ages 4–15; DLQI for ages 16–18) alongside assessments of demographics, clinical characteristics, bullying exposure, and anxiety symptoms. Multivariate linear regression identified independent predictors of quality of life scores. **Results:** Mean CDLQI/DLQI score was 8.5 ± 5.3, with 52.8% experiencing moderate-to-severe impairment (scores ≥6). Atopic dermatitis predominated (47.8%) and demonstrated highest mean impairment (9.9 ± 5.5). Multivariate analysis revealed seven independent predictors: greater body surface area involvement (β=0.27, p<0.001), female sex (β=1.35, p<0.001), lower socioeconomic status (β=2.38, p<0.001), atopic dermatitis diagnosis (β=1.84, p<0.001), bullying exposure (β=2.61, p<0.001), anxiety symptoms (β=1.92, p<0.001), and longer disease duration (β=0.03, p=0.005). The final model explained 49% of variance in quality of life scores. **Conclusion:** Quality of life impairment reflects complex interactions between clinical severity, psychosocial stressors and socioeconomic context. Holistic management must integrate dermatological treatment with anti-bullying initiatives and mental health support.

Key words: Atopic Dermatitis, Chronic Skin Disorders, Quality of Life, Psychosocial Factors, Socioeconomic Status.

Article Citation: Iqbal A, Ahmad A. Factors associated with dermatology life quality index scores in children with chronic skin disorders: A cross-sectional analytical study. Professional Med J 2026; 33(06):1124-1130. https://doi.org/10.29309/TPMJ/2026.33.06.10435

INTRODUCTION

Chronic skin disorders are growing public health challenge affecting children worldwide. Approximately 685 million cases of infectious skin diseases were identified globally in children during 2021, while incidence of chronic dermatoses such as atopic dermatitis continues to increase.[1] Atopic dermatitis alone affects 102.78 million children, with prevalence approaching 20% in pediatric populations globally, making it most common chronic skin condition of childhood.[2] Beyond atopic dermatitis, other persistent dermatoses like psoriasis, vitiligo and severe acne vulgaris collectively impose considerable morbidity.[3,4]

The concept of health related quality of life (HRQoL) has emerged as an essential dimension in evaluating the true burden of dermatological conditions.[5] In children, skin disorders disrupt multiple domains of daily functioning through interconnected pathways. Persistent pruritus, pain and sleep disturbance reported in 59% of children with moderate to severe atopic dermatitis, directly impair cognitive performance and daily functioning.[6] These physical symptoms increase rates depression and social appearance anxiety among affected children.[7] Multicenter study revealed that 73% of children and adolescents with chronic skin disease experienced stigma that significantly correlated with decreased quality of life scores.[8] These psychosocial consequences often manifest as school absenteeism and participation restrictions in age appropriate activities.[9]

Bullying has been identified as potent predictor of reduced HRQoL in 30% of school aged children with visible skin conditions.[10,11] Similarly, socioeconomic status demonstrates paradoxical relationships across different healthcare systems; studies from developed countries frequently associate lower socioeconomic status with greater disease severity and HRQoL impairment, whereas findings from

1. MBBS, FCPS, Senior Registrar Pediatric Dermatology, Children Hospital & Institute of Child Health, Multan.
2. MBBS, Women Medical Officer Pediatric Dermatology, Children Hospital & Institute of Child Health, Multan.

Correspondence Address:
Dr. Aamina Iqbal
Department of Pediatric Dermatology, Children Hospital & Institute of Child Health, Multan.
aamina.iqbal01@gmail.com

Article received on:
14/01/2026
Accepted for publication:
26/03/2026

developing nations sometimes reports inverse patterns.[12,13,14]

There are methodological limitations in available literature including single disease focus (e.g. exclusively atopic dermatitis), inadequate adjustment for confounding variables and underrepresentation of diverse socioeconomic groups.[15] The absence of comprehensive, cross diagnostic analytical models limits clinicians ability to identify high risk children who may benefit from targeted psychosocial interventions beyond conventional medical therapy. Addressing these gaps requires well designed cross sectional analytical study to evaluate multiple potential determinants.

OBJECTIVE

To identify factors associated with CDLQI/DLQI scores in children with chronic skin disorders.

METHODS

This cross sectional analytical study was conducted at the Pediatric Dermatology Outpatient Clinic of the Children Hospital and Institute of Child Health in Multan from January and December 2025. Ethical approval was obtained from the Institutional Review Board of the Children Hospital and Institute of Child Health Multan (Ref: CHICH/IRB/2024/187) prior to study commencement. Written informed consent was secured from parents or legal guardians of all participating children, with additional verbal assent obtained from children aged 7 years and older. Sample size calculated to estimate the proportion of children with moderate to severe CDLQI impairment (≥6) 45%[15], confidence level 95% and precision required 5% was 381.

The study population comprised children aged 4 to 18 years presenting to the pediatric dermatology clinics during study period. Children with confirmation of chronic skin disorder by the Physician persisting for more than six weeks were included. Children with acute dermatological conditions (e.g. acute urticaria, insect bite reactions without chronicity), cognitive or developmental impairments determined by the attending dermatologist and patients with known systemic illnesses (e.g. malignancy, end stage renal disease) were excluded.

Data was collected by using structured questionnaire that consisted of four integrated components. Demographic characteristics included age, gender, residential locality and socioeconomic status. Clinical variables included physician diagnosed skin disorder type, disease duration in months and body surface area involvement estimated using the rule of nines adapted for pediatric populations. Quality of life was assessed by using Children Dermatology Life Quality Index (CDLQI) for children between 4–15 years and the Dermatology Life Quality Index (DLQI) for adolescents 16–18 years.

Data was entered and analyzed by using SPSS version 23.0. Mean and standard deviation was calculated for numerical variables while categorical variables were summarized as frequencies and percentages. DLQI scores across demographic and clinical subgroups using independent samples t-tests for normally distributed outcomes or Mann-Whitney U tests for non-parametric distributions, with analysis of variance (ANOVA) or Kruskal-Wallis tests employed for comparisons involving more than two groups. CDLQI/DLQI total score was dependent variable, entering significant predictors from bivariate analyses along with clinically relevant covariates as independent variable in regression analysis and $p < 0.05$ was taken as significant.

RESULTS

The mean age of participants was 9.7 ± 3.6 years, with nearly equal gender distribution (53.8% male). Most participants resided in urban areas (61.7%) and belonged to middle socioeconomic strata (52.0%) based on parental occupation and education levels (Table-I).

Atopic dermatitis represented the predominant diagnosis (47.8%), followed by psoriasis (17.9%) and vitiligo (13.9%). Mean duration of disease was 28.6±24.9 months. Body surface area involvement was 18.9%±15.7% with variation across different diagnostic categories (Table-II).

Overall mean CDLQI/DLQI score was 8.5±5.3 (range 0–28) with 52.8% of children experiencing moderate to severe impairment (scores ≥6). Distribution across established severity bands demonstrated right skewed pattern with 17.6%

reported no effect (0–1), 29.7% small effect (2–5), 27.3% moderate effect (6–10), 20.5% large effect (11–20) and 4.9% extremely large effect (21–30). Disease specific analysis revealed significant variation in mean scores: atopic dermatitis (9.9 ± 5.5), psoriasis (8.3 ± 4.8), vitiligo (7.2 ± 4.4), acne vulgaris (6.8 ± 4.0), chronic urticaria (5.7 ± 3.7) and other disorders (6.3 ± 4.1) ($p < 0.001$) (Table-III).

Female participants reported higher mean scores than males (9.3±5.6 versus 7.8±4.9, p=0.009). Children from rural areas showed greater impairment than urban counterparts (9.4±5.7 versus 7.9±5.0, p=0.012). Socioeconomic status exhibited clear gradient effect, with mean scores of 10.3 ± 5.8 in lower, 8.1 ± 4.9 in middle, and 6.7 ± 4.3 in upper socioeconomic groups ($p<0.001$). Clinical factors including greater BSA involvement ($r=0.43$, $p<0.001$) and longer disease duration ($r=0.19$, $p<0.001$) showed significant positive correlations with quality of life impairment. Psychosocial variables showed strong associations: children reporting bullying experiences had mean scores of 12.8 ± 6.1 versus 6.9 ± 4.2 in non-bullied peers ($p<0.001$), while those screening positive for anxiety symptoms scored 11.7 ± 5.9 versus 7.1 ± 4.7 ($p<0.001$) (Table-IV).

Multiple linear regression analysis after controlling for confounding variables, greater body surface area involvement remained strongest clinical predictor (β = 0.27, 95% CI 0.20–0.34, $p<0.001$). Female sex independently contributed to higher scores (β = 1.35, 95% CI 0.71–1.99, $p<0.001$). Socioeconomic status demonstrated dose dependent effects, with lower (β=2.38, 95% CI 1.55–3.21, $p<0.001$) and middle (β = 1.15, 95% CI 0.29–2.01, p=0.009) strata showing progressively greater impairment relative to upper strata. Atopic dermatitis diagnosis independently predicted higher scores compared to other disorders (β = 1.84, 95% CI 0.91–2.77, $p<0.001$). Among psychosocial factors, bullying exposure (β = 2.61, 95% CI 1.86–3.36, $p < 0.001$) and anxiety symptoms (β = 1.92, 95% CI 1.25–2.59, $p < 0.001$) emerged as potent independent predictors. Disease duration retained marginal significance (β = 0.03, 95% CI 0.01–0.05, p=0.005), while age, residence and psoriasis diagnosis did not achieve independent significance after multivariate adjustment (Table-V).

TABLE-I

Demographic characteristics of children with chronic skin disorders (n = 381)

Variable	Category	n (%)Mean ± SD
Age (years)	—	9.7 ± 3.6
	4–7 years	128 (33.6)
	8–12 years	167 (43.8)
	13–18 years	86 (22.6)
Sex	Male	205 (53.8)
	Female	176 (46.2)
Residential locality	Urban	235 (61.7)
	Rural	146 (38.3)
Socioeconomic status	Lower	142 (37.3)
	Middle	198 (52.0)
	Upper	41 (10.8)
Parental education	Primary or less	98 (25.7)
	Secondary	187 (49.1)
	Tertiary	96 (25.2)

Socioeconomic status categorized using modified Kuppuswamy scale adapted for Pakistani context.

Anxiety symptoms screened using SCARED with cutoff ≥25. BSA = body surface area. Continuous variables analyzed using Pearson correlation; categorical variables analyzed using independent samples t-test or one-way ANOVA.

DISCUSSION

This study findings revealed impairment in dermatology specific quality of life among children with chronic skin conditions, with over 50% of patients reported functional limitations in moderate to severe range. This impact surpasses figures reported in several European studies but corresponds closely with data emerging from South Asian populations. Such cross regional discrepancies are likely due to divergent environmental determinants, variations in healthcare system accessibility and perceptions of skin disease.[16] Atopic dermatitis was predominant diagnosis and associated with high CDLQI scores which is consistent with growing body of literature that identifies atopic dermatitis is uniquely detrimental to childhood wellbeing compared to other persistent dermatoses.[17]

TABLE-II

Clinical characteristics of chronic skin disorders among study participants (n = 381)

Diagnosis	n (%)	Mean Disease Duration (Months) ± SD	Mean BSA Involvement (%) ± SD	Most Commonly Affected Sites
Atopic dermatitis	182 (47.8)	24.7 ± 21.3	24.3 ± 17.2	Flexural areas (86.3%), face (62.1%)
Psoriasis	68 (17.9)	31.5 ± 28.4	16.8 ± 14.1	Extensor surfaces (79.4%), scalp (54.4%)
Vitiligo	53 (13.9)	41.2 ± 32.6	12.4 ± 10.8	Face (73.6%), hands (66.0%)
Acne vulgaris	45 (11.8)	18.3 ± 15.7	8.2 ± 6.9	Face (100%), upper trunk (42.2%)
Chronic urticaria	21 (5.5)	14.6 ± 12.9	5.3 ± 4.7	Generalized (85.7%)
Other disorders	12 (3.1)	29.8 ± 26.4	11.7 ± 9.3	Variable

TABLE-III

Distribution of CDLQI/DLQI scores across severity bands and by disease type (n = 381)

Variable	Category	n (%)	Mean CDLQI/DLQI Score ± SD	P-Value
Overall severity bands	None (0–1)	67 (17.6)		
	Small effect (2–5)	113 (29.7)		
	Moderate effect (6–10)	104 (27.3)		
	Large effect (11–20)	78 (20.5)		
	Extremely large effect (21–30)	19 (5.0)		
Disease type	Atopic dermatitis	182 (47.8)	9.9 ± 5.5	<0.001
	Psoriasis	68 (17.9)	8.3 ± 4.8	
	Vitiligo	53 (13.9)	7.2 ± 4.4	
	Acne vulgaris	45 (11.8)	6.8 ± 4.0	
	Chronic urticaria	21 (5.5)	5.7 ± 3.7	
	Other disorders	12 (3.1)	6.3 ± 4.1	
Total		381 (100.0)	8.5 ± 5.3	—

Clinical illness severity, as measured by the affected body surface area was found to be independent predictor of declines in quality of life by multivariate analysis. Surprisingly, the experience of bullying was a stronger predictor than any other condition. This finding strongly supports recent multi country findings that stigmatization events explain a significant portion of the diversity in quality of life, frequently outweighing the influence of objective illness activity, especially for disorders with outwardly evident symptoms.[18] The fact that CDLQI scores of bullied were twice as high as those of their peers who were not tormented, highlights the importance of protective interventions in the school setting. Simultaneously, following statistical correction for lesion visibility and clinical severity, anxiety symptoms maintained their independent predictive ability for reduced quality of life. This reinforces the well-documented bidirectional interplay between psychological distress and the perceived intensity of dermatological symptoms.[19]

When compared to their more affluent peers, children from lower and intermediate socioeconomic strata have disproportionately severe impairment, which highlights the significant influence of structural variables working in tandem with biological causes.

TABLE-IV

Bivariate associations between participant characteristics and CDLQI/DLQI scores (n = 381)

Variable	Category	n (%)	Mean Score ± SD	Test Statistic	P-Value
Gender	Male	205 (53.8)	7.8 ± 4.9	t = 2.64	0.009
	Female	176 (46.2)	9.3 ± 5.6		
Residence	Urban	235 (61.7)	7.9 ± 5.0	t = 2.51	0.012
	Rural	146 (38.3)	9.4 ± 5.7		
Socioeconomic status	Lower	142 (37.3)	10.3 ± 5.8	F = 18.73	<0.001
	Middle	198 (52.0)	8.1 ± 4.9		
	Upper	41 (10.8)	6.7 ± 4.3		
Bullying exposure	Yes	118 (31.0)	12.8 ± 6.1	t = 9.87	<0.001
	No	263 (69.0)	6.9 ± 4.2		
Anxiety symptoms	Positive screen	143 (37.5)	11.7 ± 5.9	t = 8.94	<0.001
	Negative screen	238 (62.5)	7.1 ± 4.7		
BSA involvement	Continuous	—	r = 0.43	r = 0.43	<0.001
Disease duration	Continuous	—	r = 0.19	r = 0.19	<0.001

TABLE-V

Multiple linear regression analysis identifying independent predictors of CDLQI/DLQI scores (n = 381)

Predictor Variable	β Coefficient	95% CI	P-Value	Standardized β
Body surface area involvement (%)	0.27	0.20 to 0.34	<0.001	0.31
Female sex (vs. male)	1.35	0.71 to 1.99	<0.001	0.16
Socioeconomic status				
Lower (vs. upper)	2.38	1.55 to 3.21	<0.001	0.24
Middle (vs. upper)	1.15	0.29 to 2.01	0.009	0.12
Atopic dermatitis diagnosis (vs. others)	1.84	0.91 to 2.77	<0.001	0.19
Bullying exposure (yes vs. no)	2.61	1.86 to 3.36	<0.001	0.28
Anxiety symptoms (positive vs. negative)	1.92	1.25 to 2.59	<0.001	0.21
Disease duration (months)	0.03	0.01 to 0.05	0.005	0.11

Inconsistent access to specialized dermatological care, financial obstacles to purchasing prescribed topical preparations and basic emollients, suboptimal housing conditions that exacerbate disease triggers, and limited practical means to implement recommended environmental controls particularly relevant for atopic dermatitis are likely to be compounded challenges faced by children in economically disadvantaged households.[20] Interestingly, after socioeconomic characteristics were included in the multivariate model, rural living no longer had a significant correlation with outcomes. This implies that the main cause of differences in these settings is economic deprivation rather than geographic location, which is in line with findings from other healthcare settings with low resources.[21]

An independent association between female sex and higher quality of life scores persisted across different disease types and severity grades. This finding aligns with a consistent theme in recent pediatric dermatology literature spanning conditions such as atopic dermatitis, psoriasis, and vitiligo.[22] Several plausible possibilities include the growing importance of physical appearance for females in middle childhood and adolescence, heightened self-attention to obvious cutaneous variations and possibly different peer responses to gender based

skin symptoms.[23]

The strength of study is its analytical cross-sectional design, which permitted the identification of independent predictors through multivariate techniques while adjusting for confounders. The use of standardized, developmentally appropriate quality of life measurement tools and simultaneous evaluation of clinical, demographic and psychosocial domains allowed holistic appraisal of contributing factors. However limitations of the study include cross-sectional design that precludes determination of causality or temporality among observed associations. Single tertiary care center study may not fully reflect experiences of children managed in community settings. Significant methodological limitation is the lack of a physician-rated global severity measure beyond body surface area estimation, and relying solely on self-reported bullying and anxiety may introduce recall bias.

CONCLUSION

Children with chronic skin conditions experience complicated interplay between clinical severity, psychosocial stressors and socioeconomic background that impair their quality of life. To enhance lived experiences of children with chronic skin disorders, dermatological care should be integrated with psychosocial support.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

SOURCE OF FUNDING

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

REFERENCES

1. Qiu L, Wang Y, Li Y. **Global burden and cross-country inequality of infectious skin diseases in children: findings from the Global Burden of Disease Study 2021.** Int Health. 2025; 17(1):ihaf109.
2. Tian J, Cheng Y, Li Y. **Global epidemiology of atopic dermatitis: A comprehensive systematic review and meta-analysis.** Allergy. 2023; 78(10):2545-60.
3. Sanchez SZ, Kircik L, Armstrong AW. **Systematic literature reviews on the disease burden of pediatric psoriasis: A comprehensive analysis.** Dermatol Ther (Heidelb). 2025; 15(1):1541-58.
4. Dumont S, Vrijheid M, Forns J. **Acne-related quality of life and mental health among adolescents: A cross-sectional analysis of the SPECCHIO cohort.** Clin Exp Dermatol. 2025; 50(4):795-804.
5. Weidinger S, Beck LA, Bieber T. **Burden of atopic dermatitis in paediatric patients: Results from a real-world observational study.** Br J Dermatol. 2024; 190(3):389-98.
6. Weidinger S, Novak N, Simpson EL. **Sleep disturbance in school-aged children with atopic dermatitis: Findings from a multinational cohort study.** J Allergy Clin Immunol. 2024; 153(2):456-65.
7. Siddiqui Z, Cruz I, Silverberg JI. **The psychosocial impact of pediatric vitiligo, psoriasis, and atopic dermatitis: A comparative analysis of mental health outcomes.** Bull Menninger Clin. 2024; 88(4):297-315.
8. Paller AS, Hong J, Gao L. **Stigmatization and mental health impact of chronic pediatric skin disorders: A multicenter cross-sectional study.** JAMA Dermatol. 2024; 160(5):489-98.
9. Kisieliene I, Valiukeviciene S, Zemaitiene R. **The burden of pediatric atopic dermatitis: quality of life of patients and their families.** Medicina (Kaunas). 2024; 60(3):421.
10. Paller AS, Hong J, Gao L. **Stigmatization and mental health impact of chronic pediatric skin disorders: a multicenter cross-sectional study.** JAMA Dermatol. 2024; 160(5):489-98.
11. Chernyshov PV. **Bullying in persons with skin diseases: A systematic review.** J Eur Acad Dermatol Venereol. 2024; 38(2):345-54.
12. Pathak R, Garg VK, Chauhan P. **Association of socio-demographic factors and personal hygiene with infectious childhood dermatoses: A hospital-based cross-sectional study from North India.** Ski Res Technol. 2023; 29(3):e219.
13. Reimer-Taschenbrecker A, Schmitt J, von Kobyletzki LB. **Do socioeconomic factors impact atopic dermatitis outcome? A systematic review.** Pediatr Dermatol. 2023; 40(5):789-801.
14. Nwankwo C, Silverberg JI. **The reporting of social determinants of health in pediatric dermatology clinical trials: A systematic review.** Pediatr Dermatol. 2024; 41(5):e11332763.
15. Ailawadi P, Sharma S, Handa S. **Impact of atopic dermatitis on quality of life in children and their families: A tertiary care hospital-based study from northern India.** Skin Allergy J. 2024; 7(1):112-20.
16. Huang J, Li Y, Chen Y. **Quality of life in atopic dermatitis in Asian countries: A systematic review.** Arch Dermatol Res. 2022; 314(4):321-35.
17. Aldosari BM, Alrasheed A, Aljaser S. **Childhood atopic dermatitis: A nationwide measurement of disease burden and quality of life impact.** Saudi J Med Med Sci. 2023; 11(6):342-49.
18. Siddiqui Z, Cruz I, Silverberg JI. **The psychosocial impact of pediatric vitiligo, psoriasis, and atopic dermatitis: A comparative analysis of mental health outcomes.** Bull Menninger Clin. 2024; 88(4):297-315.

19. Barbarot S, Aisenberg J, Armisen M. **The family impact of atopic dermatitis in the pediatric population: Results from a multinational observational study.** J Pediatr. 2022; 248:113337.
20. Gilkey T, Patel R, Kircik L. **Socioeconomic status correlates with increased disease severity and quality of life impairment in pediatric psoriasis.** J Am Acad Dermatol. 2024; 91(2):AB156.
21. Tewelde T, Lemma H, Alemu A. **Quality of life of dermatology outpatients and its associated factors at a tertiary hospital in Ethiopia: A cross-sectional study.** Sci Rep. 2024; 14:16289.
22. Marani A, Böhm M, Augustin M. **Gender differences in adult atopic dermatitis and clinical characteristics: Results from a German multicenter registry.** J Eur Acad Dermatol Venereol. 2024; 38(11):2145-53.
23. Zlakishvili B, Chien AL, Shin DB. **Gender disparities in high-quality dermatology research: A bibliometric analysis of authorship trends.** Int J Womens Dermatol. 2024; 10(3):235-42.

AUTHORSHIP AND CONTRIBUTION DECLARATION	
1	**Aamina Iqbal:** Study design, conception of idea.
2	**Asfa Ahmad:** Data collection, data analysis, draft writing.