

Original Research Article

CLINICAL SPECTRUM OF PEDIATRIC DERMATOSES IN A TERTIARY CARE CENTER OF CENTRAL INDIA

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ABSTRACT

Background: Pediatric dermatoses represent a significant healthcare burden, accounting for approximately 30% of outpatient visits to both pediatricians and dermatologists. The clinical presentation, treatment approaches, and prognosis differ substantially from adult cases. While numerous epidemiological studies exist across India, there is limited comprehensive research on pediatric skin disorders in Central India. The objective is to determine the frequency and clinical spectrum of various pediatric dermatoses presenting to the dermatology outpatient department at a tertiary care center in Central India.

Materials and Methods: This observational cross-sectional study was conducted at People's College of Medical Sciences & Research Center, Bhopal, from May 2023 to October 2024. Three hundred pediatric patients under 18 years were enrolled using systematic sampling. Detailed clinical history, demographic data, and examination findings were recorded. Dermatoses were categorized into 12 diagnostic groups. Data were analyzed using SPSS software with chi-square test and ANOVA, with $p < 0.05$ considered significant.

Results: The study included 300 participants with 57.3% aged >10 years, 50.7% male, and 89% from urban areas. Eczematous dermatitis was the most common diagnosis (30.3%), followed by disorders of skin adnexa (17%), and fungal infections (14.7%). Face was the most commonly affected site (30%), and plaques were the predominant lesion type (48.7%). Age-wise analysis showed significant variations ($p < 0.001$): eczematous dermatitis predominated in younger children (under 5 years: 36.4%), while disorders of skin adnexa increased markedly in adolescents (>10 years: 26.7%). Significant associations were found between age and site ($p = 0.012$), age and lesion type ($p = 0.007$), gender and diagnosis ($p = 0.03$), past history and diagnosis ($p < 0.001$), and family history with both site and diagnosis ($p < 0.001$). Notably, 10.8% of patients were asymptomatic at presentation.

Conclusion: Eczematous dermatitis, disorders of skin adnexa, and fungal infections constitute the major burden of pediatric dermatoses in Central India. The predominance of non-infectious dermatoses suggests epidemiological transition in urban populations. Significant age-related and gender-specific variations necessitate targeted preventive strategies and age-appropriate management approaches. These findings provide crucial baseline data for developing region-specific health policies and educational programs.

Keywords: Pediatric dermatoses, clinical spectrum, tertiary care, Central India, eczematous dermatitis, fungal infections, epidemiology.

INTRODUCTION

Pediatric dermatoses has established its own distinct role within dermatology due to certain conditions that are unique to children, such as staphylococcal scalded skin syndrome and neonatal dermatoses. Additionally, some conditions are predominantly seen in this age group, like atopic dermatitis and impetigo. Few diseases present with different characteristics in adults and children such as dermatomyositis and psoriasis, and finally, there are diseases which start in childhood and continue into adulthood, like genodermatoses. Therefore, the approach to pediatric dermatosis requires sound dermatological knowledge combined with pediatric sensitivity.^[1-3]

Pediatric dermatoses encompasses a wide spectrum of conditions, with infections and infestations being the most prevalent. Studies have shown that infections account for 47.15% to 63% of pediatric dermatological diagnoses, with bacterial infections, scabies, and fungal infections being particularly common.^[1,2,4] Other frequently encountered conditions include eczemas, atopic dermatitis, and seborrheic dermatitis.^[2,3] Interestingly, the prevalence and types of dermatoses can vary significantly based on geographical location, socioeconomic factors, and ethnicity. The dermatological problems constitute about 30% of all outpatient visits to pediatricians and 30% of all dermatological outdoor consultations involve children.^[5] Most of the cutaneous diseases which result from intrinsic genetic abnormalities have onset in the pediatric age-group. The incidence of various dermatologic conditions varies according to age, race, geographic locations, climate, nutrition, hygiene, socio-economic conditions and heredity. Several problems including lack of education, social backwardness, lack of health care facilities in rural areas, lack of sanitation, excess pollution and overcrowding contribute to more incidence of infectious disorders in developing countries like India.^[6]

The occurrence and distribution of skin conditions among children vary between countries and even within different regions of the same country. Research conducted in both the Middle East and Western nations indicates that dermatitis is the most common skin condition among children, whereas infections and infestations are more frequently observed in developing regions.^[7-9] Numerous epidemiological investigations have been conducted worldwide, including in India, to examine the trends in pediatric skin conditions.^[10] However, there is a

scarcity of research focused on pediatric dermatoses in Central India. Therefore, this study aimed to assess the prevalence of various pediatric skin disorders among patients visiting the dermatology outpatient department at a tertiary care center in Central India.

MATERIALS AND METHODS

This observational cross-sectional study was conducted at the Dermatology Outpatient Department of People's College of Medical Sciences & Research Center, Bhopal, from May 2023 to October 2024. The study population comprised pediatric patients under 18 years of age, categorized into three age groups: under 5 years, 5-10 years, and more than 10 years. A sample size of 300 was calculated using the formula $n = 3.84 \cdot (p \cdot q) / d^2$ with 5% absolute precision and 95% confidence limit. All new and previously diagnosed cases with various pediatric dermatoses willing to participate were included, while patients above 18 years were excluded.

Data collection was performed during the first three days of each week. After obtaining written informed consent and ethical committee approval, detailed clinical history including demographic information, educational status, past and family history, fomite sharing habits, bathing practices, and residential location was recorded. Clinical examination documented presenting symptoms (itching, discoloration, dryness, scaling, oozing, pain), site of lesions, and type of lesions. Clinical photographs were taken for documentation. Dermatoses were categorized into: bacterial infections, fungal infections, viral infections, infestations, eczematous dermatitis, papulosquamous disorders, urticaria and drug reactions, pigmentary disorders, disorders of skin adnexa, genodermatoses, tumors, and others.

Data analysis was performed using SPSS software. Appropriate statistical tests including chi-square test and ANOVA were applied, with p-value <0.05 considered statistically significant. Descriptive statistics were used to present frequencies and percentages for categorical variables.

RESULTS

The study included 300 participants with mean age distribution showing predominance in the >10 years age group [Table 1]. Gender distribution was nearly equal with slight male preponderance. Majority of participants were school-going children from urban areas. History of past dermatoses was present in 44% while family history was positive in 16.3% of cases.

Table 1: Demographic Characteristics and Clinical History of Study Participants (N=300)

Parameter	Category	Frequency	Percentage
Age Group	Under 5 years	88	29.3
	5-10 years	40	13.3
	>10 years	172	57.3
Gender	Male	152	50.7
	Female	148	49.3

Educational Status	School Going	232	77.3
	None	68	22.7
Location	Urban	267	89.0
	Rural	33	11.0
Past History	Yes	132	44.0
	No	168	56.0
Family History	Yes	49	16.3
	No	251	83.7
Fomite Sharing	Yes	49	16.3
	No	251	83.7

Table 2: Clinical Presentation - Symptoms, Sites, and Lesion Types (N=300)

Parameter	Category	Frequency	Percentage
Common Symptoms	Itching + Oozing	68	11.7
	None	63	10.8
	Itching	30	5.2
	Itching + Dryness + Scaling	30	5.2
	Itching + Scaling	27	4.6
Common Sites	Face	90	30.0
	Lower Extremity	36	12.0
	Scalp	29	9.7
	Trunk + Upper Extremity	26	8.7
	Trunk	24	8.0
Lesion Types	Plaque	146	48.7
	Papule	84	28.0
	Macule	25	8.3
	Others	11	3.7
	Papule + Pustule	8	2.7

The most frequent presenting symptom combination was itching with oozing (11.7%), though notably 10.8% of patients were asymptomatic at presentation [Table 2]. Face was the most commonly affected site

(30%), followed by lower extremities. Plaques represented the predominant lesion morphology (48.7%), followed by papules (28%).

Table 3: Distribution of Diagnoses and Age-wise Pattern (N=300)

Diagnosis Category	Total n (%)	Under 5 years n (%)	5-10 years n (%)	>10 years n (%)	P-value
Eczematous Dermatitis	91 (30.3)	32 (36.4)	14 (35.0)	45 (26.2)	<0.001*
Disorders of Skin Adnexa	51 (17.0)	1 (1.1)	4 (10.0)	46 (26.7)	
Fungal Infections	44 (14.7)	16 (18.2)	6 (15.0)	22 (12.8)	
Viral Infections	29 (9.7)	11 (12.5)	4 (10.0)	13 (7.6)	
Pigmentary Disorders	22 (7.3)	7 (8.0)	1 (2.5)	14 (8.1)	
Infestations	20 (6.7)	2 (2.3)	4 (10.0)	14 (8.1)	
Bacterial Infections	11 (3.7)	8 (9.1)	1 (2.5)	2 (1.2)	
Urticaria/Drug Reactions	10 (3.3)	2 (2.3)	2 (5.0)	6 (3.5)	
Papulosquamous Disorders	10 (3.3)	2 (2.3)	3 (7.5)	5 (2.9)	
Tumors	7 (2.3)	6 (6.8)	0 (0.0)	1 (0.6)	
Others	6 (2.0)	1 (1.1)	1 (2.5)	4 (2.3)	
Genodermatoses	0 (0)	0 (0)	0 (0)	0 (0)	

*Statistically significant

Eczematous dermatitis emerged as the most common diagnosis (30.3%), followed by disorders of skin adnexa (17%) and fungal infections (14.7%) [Table 3]. Age-wise analysis revealed significant variations ($p<0.001$): eczematous dermatitis predominated in younger age groups (under 5 years: 36.4%; 5-10

years: 35%), while disorders of skin adnexa showed marked increase in older children (>10 years: 26.7%). Bacterial infections were most common in children under 5 years (9.1%), while fungal infections showed relatively consistent prevalence across all age groups.

Table 4: Association of Clinical Parameters with Demographics

Association	Significant Findings	P-value
Location vs Symptoms	Rural: Itching (18.2%), None (18.2%); Urban: Itching+Oozing (23.6%)	0.861
Location vs Lesion Type	Rural: Plaque (45.5%), Papule (24.2%); Urban: Plaque (49.1%), Papule (28.5%)	0.21
Age vs Site	Under 5y: Face (18.2%); 5-10y: Face (32.5%); >10y: Face (35.5%)	0.012*
Age vs Lesion Type	Under 5y: Plaque (64.8%); 5-10y: Plaque (47.5%); >10y: Plaque (40.7%), Papule (34.9%)	0.007*
Gender vs Site	Female: Face (27%), Lower extremity (15.5%); Male: Face (32.9%), Trunk+Upper extremity (11.8%)	0.28
Gender vs Lesion Type	Female: Plaque (50%), Papule (23.6%); Male: Plaque (47.4%), Papule (32.2%)	0.29
Gender vs Diagnosis	Female: Eczematous dermatitis (25.7%); Male: Eczematous dermatitis (34.9%)	0.03*

Past History vs Diagnosis	With past history: Eczematous dermatitis (31.8%), Fungal infections (22.7%), Skin adnexa disorders (22.7%)	<0.001*
Family History vs Site	With family history: Trunk+Upper extremity (24.5%), Groin+Trunk (16.3%)	<0.001*
Family History vs Diagnosis	With family history: Eczematous dermatitis (32.7%), Infestations (28.6%), Fungal infections (28.6%)	<0.001*

*Statistically significant

Significant associations were observed between age groups and clinical parameters including site ($p=0.012$) and lesion type ($p=0.007$) [Table 4]. Face involvement increased with age across all groups. Gender showed significant association with diagnosis ($p=0.03$), with eczematous dermatitis more common in males. Past history significantly correlated with recurrent eczematous dermatitis and fungal infections ($p<0.001$). Family history demonstrated strong associations with both site distribution and specific diagnoses, particularly fungal infections and infestations ($p<0.001$), suggesting genetic and environmental transmission patterns.

DISCUSSION

This study provides comprehensive insights into the clinical spectrum of pediatric dermatoses in Central India, revealing distinct patterns influenced by age, environmental factors, and socioeconomic conditions. The predominance of older children (>10 years: 57.3%) in our study population, with nearly equal gender distribution (male 50.7%), reflects typical dermatology outpatient attendance patterns. The high proportion of school-going children (77.3%) from urban areas (89%) indicates better healthcare access and awareness among urban populations, consistent with findings by Rao SG et al.^[11] The presence of past history in 44% of cases suggests chronicity or recurrence of pediatric dermatoses, while positive family history in 16.3% indicates potential genetic predisposition or shared environmental exposures, particularly for conditions like atopic dermatitis and fungal infections.

Our finding that eczematous dermatitis was the most common diagnosis (30.3%) aligns with global trends showing increasing prevalence of atopic conditions in pediatric populations.^[1-3] This contrasts with several Indian studies where infections predominated,^[4,7,8] suggesting epidemiological transition in urban Central India with improved hygiene but increased atopic tendencies. The second most common category, disorders of skin adnexa (17%), predominantly acne vulgaris in older children, reflects the significant burden of adolescent dermatoses. Fungal infections (14.7%) remained substantial, consistent with tropical climate and humidity in Central India. Mukhtar R et al.^[12] reported higher fungal infection rates (48.7%), possibly due to regional climatic variations. The relatively low prevalence of bacterial infections (3.7%) compared to Balai et al.'s findings (13.72%),^[13] may reflect improved hygiene practices and healthcare access in our urban-predominant

population. Age-stratified analysis revealed important developmental patterns: younger children (<5 years) predominantly presented with eczematous dermatitis (36.4%) and bacterial infections (9.1%), reflecting immature immune systems and exposure patterns. The dramatic increase in disorders of skin adnexa (26.7%) among adolescents (>10 years) corresponds with hormonal changes and puberty. Chitapur et al.^[14] similarly observed age-related variations, emphasizing the importance of age-specific prevention strategies. The significant association between family history and diagnosis ($p<0.001$), particularly for fungal infections (28.6%) and infestations (28.6%), highlights the role of shared living environments and potential genetic susceptibility in disease transmission within households.^[15,16]

Clinical presentation patterns revealed face as the most commonly affected site (30%), consistent with psychological impact concerns that drive healthcare-seeking behavior. The predominance of plaques (48.7%) and papules (28%) as primary morphologies reflects the high proportion of eczematous and acne cases. Interestingly, 10.8% of patients were asymptomatic, discovered during screening, emphasizing the importance of routine dermatological examination in pediatric populations. Gender-specific analysis showed significant diagnostic differences ($p=0.03$), with males more affected by eczematous dermatitis (34.9% vs 25.7%), possibly due to increased outdoor exposure and delayed healthcare-seeking. The strong association between past history and recurrent eczematous dermatitis (31.8%) underscores the chronic relapsing nature of atopic conditions and need for long-term management strategies.^[17,18] Geographic analysis, though limited by small rural sample size (11%), suggested no significant differences in lesion types between urban and rural populations, contrasting with traditional assumptions about urban-rural disease pattern variations.^[19,20]

The study's limitations include single-center design, limited rural representation, and lack of follow-up data on treatment outcomes. The predominance of urban patients may not reflect the true disease burden in rural Central India, where access to tertiary care is limited and disease patterns may differ significantly. Future multicenter, population-based studies with adequate rural representation are needed to comprehensively evaluate pediatric dermatoses across Central India. Long-term follow-up studies would provide valuable insights into disease progression, treatment efficacy, and quality of life impact. Nevertheless, this study contributes to the limited literature on pediatric dermatoses in Central

India and provides a framework for developing region-specific prevention programs, appropriate resource allocation, and targeted health education initiatives for both healthcare providers and communities.

CONCLUSION

This study demonstrates that eczematous dermatitis (30.3%), disorders of skin adnexa (17%), and fungal infections (14.7%) constitute the predominant pediatric dermatoses in Central India, reflecting an epidemiological transition toward non-infectious conditions in urban populations. Significant age-related variations were observed, with younger children predominantly affected by eczematous dermatitis and bacterial infections, while adolescents showed marked increase in acne and related adnexal disorders. Strong associations between family history and specific diagnoses, particularly fungal infections and infestations, underscore the importance of household-level interventions and genetic counseling. The relatively low prevalence of bacterial infections compared to other Indian studies suggests improved hygiene and healthcare access in urban settings, though fungal infections remain substantial due to favorable climatic conditions. Gender-specific differences and the notable proportion of asymptomatic presentations (10.8%) emphasize the need for targeted preventive strategies and routine dermatological screening programs. While this single-center study with limited rural representation has inherent limitations, it provides crucial baseline data for developing region-specific health policies, appropriate resource allocation, and targeted educational interventions for healthcare providers and communities. Future multicenter, population-based studies with adequate rural representation and long-term follow-up are warranted to comprehensively evaluate the burden of pediatric dermatoses across Central India and assess treatment outcomes and quality of life impact.

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