

# **Original Research Article**

# PATTERN OF DERMATOSES AMONG PEDIATRIC PATIENTS ATTENDING A TERTIARY CARE HOSPITAL

 Received
 : 07/01/2024

 Received in revised form
 : 05/03/2024

 Accepted
 : 18/03/2024

Keywords:

Pediatric dermatoses, Pattern, Dermatoses, Infections, Scabies, India.

Corresponding Author: **Dr. Faraz Ahmad Khan,** Email: docfarazkhan@gmail.com

DOI: 10.47009/jamp.2024.6.2.180

Source of Support: Nil, Conflict of Interest: None declared

Int J Acad Med Pharm 2024; 6 (2); 875-881



Faraz Ahmad Khan<sup>1</sup>, Mohd Asad Haroon<sup>2</sup>, Safia Siddiqui<sup>3</sup>, Shikha Agarwal<sup>4</sup>, Syed Esam Mahmood<sup>5</sup>

<sup>1</sup>Associate Professor, Department of Pediatrics, Hind Institute of Medical Sciences, Sitapur, India. <sup>2</sup>Professor, Department of Dermatology, Integral Institute of Medical Science and Research, Integral University, Lucknow, India.

<sup>3</sup>Associate Professor, Department of Dentistry, Integral Institute of Medical Science and Research, Integral University, Lucknow, India.

<sup>4</sup>Associate Professor, Department of Ophthalmology, Ram Manohar Lohia Institute of Medical Sciences, Lucknow, India.

<sup>5</sup>Professor, Department of Family and Community Medicine, College of Medicine, King Khalid University, Abha 62529, Saudi Arabia.

## Abstract

Background: The objective of this study was to determine the pattern of pediatric dermatoses in the outpatient department of a tertiary care centre of Central Uttar Pradesh, India. Materials and Methods: This study was designed to observe and assess the patterns of various skin disorders among children. Retrospective analysis of medical records of children aged Birth to 14 years, seen in the outpatient Department of Dermatology from January 1st, 2016 to December 31st, 2019 was done. The diagnosis was made by dermatologists after examining the children and conducting relevant tests. Follow-up cases were not included. Result: In this study, 5086 skin disorders were diagnosed in 4850 patients, with 57.4% males and 42.6% females. Pediatric dermatoses were classified into different categories, with the most frequent being Infections & Infestation disorders (52.77%), followed by Eczematous Disorders (16.87%) and disorders related to Sebaceous and sweat glands (6.11%). Other notable categories included Pigmentation disorders (4.64%), Hypersensitivity Disorders (4.46%), Papulosquamous disorders (3.30%), and Cornification disorders (2.54%). The Miscellaneous diseases group had the most cases of erythema toxicum neonaturm. **Conclusion:** This study provides valuable insights into the epidemiology of skin disorders in children, with infestations and infections as the most frequent types, followed by eczematous disorders. The findings underscore the importance of recognizing the patterns of pediatric dermatoses, which is essential for forming healthcare policy and ultimately promoting the health and well-being of children.

#### INTRODUCTION

The frequency of Pediatric dermatoses is increasing worldwide and should be given more consideration. Research suggests that as many as 30% of pediatric primary care visits are related to skin disorders, [1] and likewise, 30% of all visits to a dermatologist involve children. [2] The incidence of dermatoses is influenced by various factors such as race, social status, and environment, and the disease pattern in children is distinct from that of adults. [3] The prevalence of skin disorders varies by location and country. However, literature on the pattern of pediatric dermatoses in this part of the world is scarce. As a result, this study was carried out to identify patterns of dermatoses in this age group. The present study was conducted to determine the pattern

of pediatric dermatoses in the outpatient department of a tertiary care center of Central Uttar Pradesh, India.

## **MATERIALS AND METHODS**

This study analyzed medical records retrospectively and was conducted after obtaining Ethical clearance from the Institutional Ethical Committee of Integral Institute of Medical Sciences and Research, Lucknow (IEC/IIMSR/2020/02). The data of children, aged between Birth to 14 years, was collected over a period of 4 years, from January 1st, 2016 to December 31st, 2019. The data was gathered from the medical record section of the hospital, and only new cases were included in the study, while follow-up cases were excluded. The diagnoses were made by

the Dermatologists, based on a detailed history, clinical presentation, and appropriate investigations. The children were divided into three groups according to their age: Group A (Birth -1 year, infants), Group B (1-5 years, toddlers and preschoolers), and Group C (>5 years to 14 years, middle childhood, young teens and teenagers). Over the course of the 4-year study period, we observed a variety of skin conditions and classified them into different categories. Any conditions that didn't fit in any of the categories were placed in the "miscellaneous" category. The number of cases and their percentages of disorders are provided in each table. The frequencies of diseases according to age and gender were recorded, and the data was entered and tabulated in an MS-Excel sheet. Descriptive statistical analysis was performed using variables such as frequency and percentage.

## **RESULTS**

During the 4-year study period, a total of 54,776 new cases attended the dermatology OPD. The study included 4,850 children, with 2,784 (57.4%) being male and 2,066 (42.6%) being female, resulting in a male-to-female ratio of 1.3:1. [Table 1] provides the distribution of pediatric dermatoses by age group and gender, showing that males outnumbered females in all age groups. Among the 4,850 children, 236 had more than one pediatric dermatosis, accounting for 4.6% of the total cases. The distribution of dermatoses observed in the study is elaborated in [Table 2], which highlights the different categories of conditions observed in children. The most common type of pediatric dermatosis was infectious and infestation disorders, affecting 2,684 children (52.77%). This was followed by eczematous disorders in 858 children (16.87%), disorders of the sebaceous and sweat glands in 311 children (6.11%), disorders of pigmentation in 236 children (4.64%), hypersensitivity disorders in 227 children (4.46%), and papulosquamous and related disorders in 168 children (3.30%).

The most common type of pediatric dermatosis was infectious and infestation disorders, affecting 2,684 children (52.8%). This was followed by eczematous disorders in 858 children (16.87%), disorders of the sebaceous and sweat glands in 311 children (6.11%), The most common type of pediatric dermatosis was infectious and infestation disorders, affecting 2,684 children (52.8%). This was followed by eczematous disorders in 858 children (16.87%), disorders of the sebaceous and sweat glands in 311 children (6.11%), disorders of pigmentation in 236 children (4.64%), hypersensitivity disorders in 227 children (4.46%), and papulosquamous and related disorders in 168 children (3.30%).

[Table 3] illustrates the distribution of infectious and infestation disorders in the study population. Infectious disorders as a whole were the most common, affecting 1,563 children (30.7%),

followed by infestations that affected 1,121 children (22.1%). Among infectious etiology, fungal infections were the most common, accounting for the majority of cases (63.72%), with Tinea Corporis being the most frequently diagnosed fungal infection, affecting 996 children (36.14%). Bacterial infections, specifically folliculitis, affected 269 children (17.21%), while viral infections, particularly molluscum contagiosum, affected 55 children (3.51%). The most common infestation observed was scabies, affecting 1,082 children and accounting for 96.5% of all cases in the infestation category. Scabies was predominantly observed in males, with a maleto-female ratio of 1.8 to 1, and the majority of cases occurred in children above five years old. Scabies, Tinea Corporis, and folliculitis were the most frequently diagnosed individual conditions, with scabies accounting for 21.27% of all pediatric dermatoses.

Eczematous Disorders were the second largest group of pediatric dermatoses observed in our study, with 858 children affected, comprising 16.87% of total cases [Table 4]. Seborrheic dermatitis was the most common eczematous disorder affecting 223 (4.38%) children, followed by eczema affecting 203 (3.99%) children. Seborrheic dermatitis affected males and females in all age groups, with the highest number of cases observed in the 5 to 14-year age group. In less than one year age group it was predominantly seen in males (56) as compared to females.

The disorder involving the sebaceous and sweat glands was the predominant condition among Non-Infective/Non-eczematous pediatric dermatoses [Table 5], accounting for 72.66% of cases in its group and affecting 226 (6.11%) children. In pigmentary disorders, Vitiligo Vulgaris was the most frequently observed, affecting 152 children (2.99%), representing 64.46% of cases within its group. Other pigmentary disorders included Post Inflammatory Hyper/Hypo pigmentation, Localised Vitiligo, Lentigines, and various other conditions. In Hypersensitivity disorders, Papular Urticaria was a predominant diagnosis affecting 156 (3.06%) children contributing 68.2% cases in its category.

Psoriasis was the most common papulosquamous disorder affecting 78 (1.53%) children, contributing to 46.4% of cases in its category. Among the disorders of cornification, Xerosis was the most common, affecting 70 children, which accounts for 1.38% of the cases. Keratoderma/Palmo Plantar Hyperkeratosis affected 46 children (0.90%), while Ichthyosis Vulgaris impacted 13 children (0.26%).

Other notable conditions mentioned in the table include disorders of hair, cutaneous lesions and TM syndromes, photosensitive and photoreaction disorders, bullous disorders of childhood, vascular disorders of infancy and childhood, collagen vascular disorders, drug reactions, nutritional dermatoses, nail disorders, and miscellaneous dermatoses.

It's important to note that the numbers and percentages presented in the columns of tables 1 to 5 depict the absolute number and percentage of children affected in each category or specific

disorder. The numbers in brackets in footnotes of table 3-5 represent the number of reported cases for each specific condition within its respective category.

Table 1: Age and gender distribution of dermatoses in children

Age group	Male	Female	Total (%)
Group A (Birth - 1 year)	348	222	570 (11.21)
Group B (1 year - 5 years)	796	526	1322 (25.99)
Group C (5 years - 14 years)	1776	1418	3194 (62.80)
Total	2920	2166	5086 (100.00)

Table 2: Distribution of Various Pediatrics Dermatoses in Children

Dermatoses	N (%)		
Infections & Infestation disorders	2684 (52.77%)		
Eczematous Disorders	858 (16.87%)		
Disorder of Sebaceous & Sweat Gland	311 (6.11%)		
Disorders of Pigmentation	236 (4.64%)		
Hypersensitivity Disorders	227 (4.46%)		
Papulosquamous & related disorder	168 (3.30%)		
Disorders of Cornification	129 (2.54%)		
Disorder of Hair	76 (1.49%)		
Cutaneous Lesions & Tm Syndromes	58 (1.14%)		
Photosensitive & Photoreaction disorders	51 (1.00%)		
Bullous disorder of Childhood	44 (0.87%)		
Vasculitis	38 (0.75%)		
Nutritional dermatoses	25 (0.49%)		
Nail diseases	23 (0.45%)		
Vascular disorders of Infancy & Childhood	19 (0.37%)		
Collagen Vascular Disorder	17 (0.33%)		
Drug Reactions	5 (0.10%)		
Miscellaneous	117 (2.3%)		
Total	5086 (100%)		

Table 3: Distribution of Infections and Infestations disorder.

	Birth - 1 year		1 - 5 years		5 years - 14 years		Total N (%)
	Male	Female	Male	Female	Male	Female	
Infestation	69	56	224	105	414	253	1121 (22.04%)
Scabies	69	56	217	94	409	237	1082 (21.27%)
Pediculosis	0	0	7	11	5	16	39 (0.77%)
Infections	69	48	277	177	563	429	1563 (30.7%)
Fungal Infection	44	35	186	104	356	271	996 (19.58%)
Tinea Corporis	28	16	121	59	207	134	565 (11.11%)
Tinea Capitis	0	0	14	13	36	43	106 (2.08%)
Tinea Cruris	2	2	19	7	37	17	84 (1.65%)
Tinea Faciei	3	0	10	7	24	34	78 (1.43%)
Pityriasis Versicolor	0	4	8	9	16	21	58 (1.14%)
Others <sup>a</sup>	11	13	14	9	36	22	105 (2.06%)
Bacterial Infection	21	12	65	54	155	123	430 (8.45%)
Folliculitis	7	5	42	40	93	82	269 (5.29%)
Impetigo	10	7	12	9	28	31	97 (1.91%)
Leprosy	1	0	8	3	22	6	40 (0.79%)
Others <sup>b</sup>	3	0	3	2	12	4	24 (0.47%)
Viral Infection	4	1	26	19	52	35	137 (2.69%)
Molluscum contagiosum	3	1	11	9	17	14	55 (1.08%)
Verruca Vulgaris	0	0	6	2	14	7	29 (0.57%)
Verruca Plana	0	0	2	3	5	7	17 (0.33%)
Others <sup>c</sup>	1	0	7	5	16	7	36 (0.71%)
Total	138	104	501	282	977	682	2684 (52.77%)

<sup>&</sup>lt;sup>a</sup> includes Tinea Incognito (27), Intertrigo (23), Tinea Pedis (18), Onychomycosis (13), Tinea Manuum (9), Cutaneous Candidiasis (8), Paronychia (6), Perleche (1).

<sup>&</sup>lt;sup>b</sup> includes Periporitis (17), Lupus Vulgaris (4), Blistering dactylitis (1), Lymphogranuloma Venereum (1), Staphylococcal scalded skin syndrome (1).

cincludes Chicken Pox (12), Herpes Simplex (3), Herpes Labialis (3), Plantar Wart (2), Hand Foot Mouth disease (1), Viral exanthem (15).

The numbers in brackets in footnotes of table 3 represent the number of reported cases for each specific condition within its respective category.

**Table 4: Distribution of Eczematous Disorders** 

	Birth - 1 year		1 - 5	years	5 years -	Total N (%)	
	Male	Female	Male	Female	Male	Female	
Seborrheic Dermatitis	56	21	20	17	53	56	223 (4.38%)
Eczema	12	6	30	33	68	54	203 (3.99%)
Pityriasis alba	2	5	26	17	55	36	141 (2.77%)
Atopic dermatitis	18	5	7	7	13	22	72 (1.42%)
Hand Eczema	0	0	6	7	11	9	33 (0.65%)
Irritant CD	3	1	6	3	8	9	30 (0.59%)
Allergic CD	2	0	7	4	9	5	27 (0.53%)
Diaper dermatitis	16	11	0	0	0	0	27 (0.53%)
Paederus Dermatitis	1	0	3	1	9	6	20 (0.39%)
Others <sup>d</sup>	5	3	7	4	32	31	82 (1.61%)
Total	115	52	112	93	258	228	858 (16.87%)

d includes Plantar Eczema (18), Non Specific Dermatitis (10), Lichen Striatus (9), Sweat Dermatitis (8), Lichenoid Dermatitis (8), Nummular Eczema (7), Facial Dermatitis (6), Juvenile Palmoplantar Dermatosis (5), Lichen Simplex Chronicus (4), Lip Lick dermatitis (3), Perianal Dermatitis (2), Adenoma sebaceum (1), Pompholyx (1).

The numbers in brackets in footnotes of table 4 represent the number of reported cases for each specific condition within its respective

Table 5: Distribution of Non-Infective/Non-Eczematous pediatric dermatoses

	Birth - 1 year		1 - 5 years		5 years - 14 years		Total N	
	Male	Female	Male	Female	Male	Female	(%)	
Disorder of Sebaceous & Sweat								
Glands	11	4	19	16	140	121	311 (6.11%)	
Acne	3	1	8	6	116	92	226 (4.44%)	
Miliaria Rubra	8	3	9	8	20	23	71 (1.40%)	
Others <sup>e</sup>	0	0	2	2	4	6	14 (0.28%)	
Disorders of Pigmentation	6	8	25	41	57	99	236 (4.64%)	
Vitiligo Vulgaris	2	4	14	27	39	66	152 (2.99%)	
Post Inflammatory Hyper/Hypo	0	1	6	6	9	8	30 (0.59%)	
Localized Vitiligo	0	0	2	3	2	5	12 (0.24%)	
Lentigines	0	0	2	4	2	2	10 (0.20%)	
Others <sup>f</sup>	4	3	1	1	5	18	32 (0.64%)	
Hypersensitivity Disorder	17	8	35	22	81	64	227 (4.46%)	
Papular Urticaria	14	7	27	16	52	40	156 (3.06%)	
Urticaria	3	1	8	6	29	24	71 (1.39%)	
Papulosquamous & related disorder	6	1	28	17	73	43	168 ( 3.30%)	
Psoriasis	2	0	13	10	34	19	78 (1.53%)	
Lichen Planus	1	0	5	3	14	8	31 (0.61%)	
Lichen Nitidus	0	0	2	0	12	8	22 (0.43%)	
Pityriasis rosea	0	0	6	4	6	5	21 (0.41%)	
Others <sup>g</sup>	3	1	2	0	7	3	16 (0.32%)	
Disorders of Cornification	6	3	26	11	52	31	129 (2.54%)	
Xerosis	6	3	10	7	26	18	70 (1.38%)	
Keratoderma / PalmoPlantar Hyperkeratosis	0	0	14	3	19	10	46 (0.90%)	
Ichthyosis Vulgaris	0	0	2	1	7	3	13 (0.26%)	
Disorders of Hair	0	3	10	14	21	28	76 (1.49%)	
Alopecia areata	0	0	5	5	10	8	28 (0.55%)	
Diffuse Hair Loss	0	1	1	4	3	11	20 (0.39%)	
Premature Graying of Hair	0	0	4	5	3	5	17 (0.33%)	
Others <sup>h</sup>	0	2	0	0	5	4	11 (0.22%)	
Cutaneous Lesions & Tm Syndromes <sup>i</sup>	0	1	4	6	20	27	58 (1.14%)	
Photosensitive & Photoreaction <sup>j</sup>	0	0	9	5	16	21	51 (1.00%)	
Bullous disorder of Childhood <sup>k</sup>	3	2	7	7	11	14	44 (0.87%)	
Vasculitis <sup>1</sup>	0	0	9	3	16	10	38 (0.75%)	
Nutritional dermatoses <sup>m</sup>	3	0	2	0	13	7	25 (0.49%)	
Nail disorder <sup>n</sup>	0	0	2	1	13	7	23 (0.45%)	
Vascular Disorders of Infancy & Childhood <sup>o</sup>	4	9	0	1	3	2	19 (0.37%)	
Collagen Vascular Disorder <sup>p</sup>	1	0	1	4	2	9	17 (0.33%)	
Drug Reactions <sup>q</sup>	0	0	0	0	3	2	5 (0.10%)	
Miscellaneous	39	27	6	3	20	23	118 (2.32%)	
Erythema Toxicum Neonaturm	33	24	0	0	0	0	57 (1.1%)	
Others <sup>r</sup>	6	3	6	3	20	23	61 (1.2%)	

<sup>&</sup>lt;sup>e</sup> includes Acneiform eruption (10), Palmoplantar Hyperhidrosis (4).

category.

fincludes Melasma (9), Freckles (4), Mongolian Spot (4), Segmental Vitiligo (3), Nevus depigmentosus (2), Mucosal Vitiligo (2), Segmental Lentigines (1), Nevus of Ota (1), Lichen planus pigmentosus (1), Traumatic leucoderma (1), Chemical leucoderma (1), Steroid induced hypopigmentation (1), Lip pigmentation (1), Poikiloderma (1).

- g includes Seborrhea Capitis (9), Guttate Psoriasis (4), Juvenile plantar psoriasis (2), Pityriasis Rubra Pilaris (1).
- h includes Female Pattern Hair Loss (4), Wooly hair Syndrome (3), Patchy Hair loss (2), Cicatricial Alopecia (1), Telogen effluvium (1).
- i includes Congenital Melanocytic Nevi (1), Melanocytic Nevi (11), Nevus of Halo (1), Nevus spilus (2), Compound Nevi (1),
- Epidermal Nevus (4), Comedonicus (1), Eccrine Poroma (1), Neurofibroma (2), Burn Injury (16), Keloid (15), Hypertrophic Scar (3).
- includes Polymorphous light eruption (49), Hydroa vacciniforme (1), Photodermatitis (1).
- k includes Keratosis Pilaris (7), Chronic bullous disease of childhood (5), Epidermolysis Bullosa (3), Acanthosis Nigricans (2), Prurigo Nodularis (2), Pemphigus (1), Milia (24).
- <sup>1</sup> includes Vasculitis (30), Henoch schonlein purpura (3), Bruise (4), Pyoderma Gangrenosum(1).
- m includes Phrynoderma (11), Cheilitis (7), Nutritional Dermatosis (4), Acrodermatitis Enteropathica(3).
- <sup>n</sup> includes Onychomycosis (13), Melanonychia (5), Beau's lines (2), Koilonychia (1), Pachyonychia congenita (1), Trachyonychia (1).
- o includes Hemangioma (16), Pigmented purpuric dermatosis (1), Umbilical Granuloma (1), Pyogenic Granuloma (1).
- p includes Morphea (13), Lichen Sclerosus et Atrophicus (2), Discoid lupus erythematosus (1), Systemic Lupus erythematosus (1).
- <sup>q</sup> includes Drug Reaction (2), Fixed Drug eruption (1), Drug Hypersensitivity Syndrome (1).
- <sup>1</sup> includes Striae (12), Topical steroid Destroyed Face (7), Fissured feet (6), Generalized Itching (6), Rash (6), Aphthous Ulcer (4), Non Specific Pruritus (4), Trichotillomania (4), Burning feet syndrome (2), Geographic Tongue (2), Dental Sinus (1), Non Healing Ulcer (1), Pitted Keratolysis (1), Hair Face (1), Reticulate Pigmentosa (1), Smegmal cyst (1), Langerhan cell histiocytosis (1).

The numbers in brackets in footnotes of table 5 represent the number of reported cases for each specific condition within its respective category.

#### **DISCUSSION**

Skin disorders are a major health concern, especially among children, and may result in significant physical and emotional suffering, adversely affecting quality of life for both the patient and their caretakers.<sup>[4]</sup>

The prevalence of skin conditions among children has been studied extensively, and recent research has found rates ranging from 8.7% to 35% in India alone. [5] In the current study, the frequency of pediatric dermatoses was found to be 9.2%, which is consistent with previous research, including a recent study by Bonthu I where the frequency of pediatric dermatoses was reported to be 9.5%. [6]

Our study revealed a male-to-female ratio of 1.3:1 for pediatric dermatoses, aligning with previous research, although it should be noted that this ratio may differ among regions and studies.<sup>[7,8]</sup> Negi's study indicated a shift in the ratio as girls surpass boys in number as they grow older. [9] Additionally, some studies have reported a higher proportion of females. [2,10,11] The age distribution of skin diseases varies across different studies. The current study found that the majority of diagnoses were in the 5 to 14-year age group (62.80%), followed by 1 to 5-yearolds (25.99%) and birth to 1-year-olds (11.21%), which is consistent with the findings of other studies.[8] However, a different study reported a contrasting age distribution, with skin diseases prevalent in the majority of the 1 to 5-year age group (44.94%), followed by school children (29.60%) and infants (25.46%).[12]

In our study, the most common group of pediatric dermatoses was infectious and infestation disorders, comprising 52.77% of cases. Among these, infections accounted for 30.7% of cases, while infestations accounted for 22.04% of cases. Our findings align with previous studies conducted in India, including those by Bonthu et al,<sup>[6]</sup> Podder et al,<sup>[13]</sup> and others.<sup>[8-9,14-16]</sup> Similar patterns have also been observed in other countries such as Nepal (32.12%),<sup>[17]</sup> Mali (55.10%) and Pakistan (59%).<sup>[18,19]</sup> In our study, we observed that the frequency of fungal infections (996, 19.6%) was higher compared to bacterial infections (430, 8.5%) and viral

infections (137, 2.7%). This finding is consistent with the conclusions drawn by Podder, [13] and Chitapur, [20] who also reported a higher frequency of fungal infections.

Scabies was found to be the leading infestation in the study, making up 96.52% of cases and causing the majority of pediatric dermatoses (21.27%). These results were comparable to previous where scabies was the dominant infestation. [9,13-14,16,20] The high frequency of scabies in our population can be attributed to various factors, including its contagious nature and the poor socioeconomic background of the study population. Many individuals who are being catered to by the hospital from rural areas characterized overcrowding, low levels of education, insufficient hygiene practices, and substandard living conditions, all of which contribute to spread of scabies. In light of these observations, it becomes imperative to further investigate the prevalence of scabies in order to develop targeted interventions that can effectively address this problem.

Tinea corporis (565, 11.11%) was found to be the most common fungal infection in our study, which is in line with the results of Amin, [19] and Chitapur.<sup>[20]</sup> However, it contradicts the findings of Podder,[13] Ranavio,[10] and Saini,[21] who all have different fungal infections. Folliculitis (269, 5.29%) was the most commonly observed bacterial infection in our study which is consistent with findings of Chitapur. [20] However, these findings contradict the results reported in the studies conducted by Saini, [21] and Medasani, [22] who reported impetigo as the most common bacterial infection in their respective studies. In leprosy we found increased incidence among children compared to previous years.<sup>[23]</sup> In a previous study done earlier from 2015 till mid 2016, only 2 cases of leprosy were reported while from 2016 till end of 2019, the number of children below 12 years who contracted leprosy rose to 28. One case of leprosy was also seen in infants.<sup>[23]</sup> In our study, the most common viral infection was Molluscum contagiosum (55, 1.08%). This result is consistent with other studies. [13,21,24] High incidence of infections and infestations in this study may be attributed to the large rural and lower socioeconomic

population attending the hospital, increasing the risk of dermatoses in children due to poor hygiene and overcrowding. These findings are consistent with previous studies that have reported similar associations between socioeconomic status, rural populations, and the increased incidence of infectious and infestation dermatoses in children. [22,25]

Eczematous disorders were the second most common group of disorders in our study, affecting 16.87% of children. This result is comparable to findings of Chitapur, [20] where 14.4% of children were affected, however it is lower than reported in other studies, ranging from 22.27% to 39.68%. [6,17,26] Seborrheic Dermatitis (223, 4.38%) and Eczema (203, 3.99%) were found to be the two most common eczematous disorders, accounting for almost half of the cases in our study. This finding is consistent with studies by Sardana and Ratan Singh, where Seborrheic Dermatitis was also reported as the most common eczematous disorder. [16,27] In the current study, only 72 cases of atopic dermatitis were observed in the study population, which made up 1.42% of the total children. The percentage of atopic dermatitis cases in the study cohort was found to be lower than the figures reported in other Indian studies, including Patel (1.71%),<sup>[14]</sup> Saini (4.1%),<sup>[21]</sup> and Bonthu (5.97%). [6] Studies conducted in countries other than India have reported higher rates of atopic dermatitis, ranging from 18.3% to 31.3%.[2-3,11,28] The low incidence of atopy in the study population suggests that differences in prevalence may be attributed to factors including socioeconomic status, diet, hygiene, and temperature. In the current study, pityriasis alba (2.77%) was more common than atopic dermatitis, which is similar to the findings of another study.[20]

Sebaceous and sweat gland disorder constituted 6.11% of all pediatric dermatoses in our study which was comparatively less than as reported by chitapur and Mavoori. [20,24] Acne was found to be the most common disorder among sebaceous and sweat gland conditions, affecting 226 children (4.44%), which aligns with the findings of the study conducted by Chitapur. [20] In a similar vein, Vitiligo was the most common pigmentary disorder affecting 152 children (2.99%) which is consistent with the results of another study. [6]

Hypersensitivity disorders constituted 4.46% of all pediatric dermatoses. Papular Urticaria was the most common disorder constituting 68.72% of hypersensitivity disorders and 3.06% of all dermatoses. In a study by Pathak, papular urticaria constituted 3.6% of all cases.<sup>[15]</sup>

The authors of the study observed that papulosquamous disorder affected 3.3% of all pediatric dermatoses. This is lower than the percentages reported in other studies, such as Bonthu (5.82%),<sup>[6]</sup> and Sacchidanand (6.08%).<sup>[8]</sup> Our study found psoriasis to be the most frequent papulosquamous disorder, affecting 46.4% of all cases, which is consistent with the findings of Sacchidanand.<sup>[8]</sup> The authors observed that 129

(2.54%) children had a disorder of cornification, with xerosis (70, 1.38%) being the most common disorder in its category. This is in contrast to Chitapur, who reported palmoplantar keratoderma as the most common disease. [20] Alopecia areata, the most common hair disorder, was found in 44 (0.57%) participants in our study which is consistent with the previous studies. [6.8,21]

Overall, this study provides valuable insights into the epidemiology of pediatric dermatoses, highlighting the importance of early recognition, appropriate management, and targeted interventions. These findings can inform healthcare policies and practices, ultimately improving patient outcomes and enhancing the quality of life for pediatric patients with dermatological conditions.

# **CONCLUSION**

The study conducted in Central Uttar Pradesh, India found that skin diseases, particularly those caused by infections and infestations, are common among children. The most common types of disorders were infestations, infections, eczematous disorders, and papulosquamous disorders. The high incidence of skin diseases in the region could be attributed to the humid climate and low socio-economic conditions. Fungal infections were more common among adolescents and teenagers, possibly due to hormonal changes and poor hygiene practices. Early detection and referral could help reduce the burden of disease. The study provides a baseline for developing public health strategies and tracking changes in the prevalence of pediatric dermatoses over time. Therefore, there is a pressing need for a comprehensive childhood disease management program to address the significant health issue of skin diseases among children in developing countries.

#### Limitation

The authors of the study do acknowledge limitations that should be taken into consideration. The study was retrospective in nature, which may introduce a potential for bias. It was also restricted to a single medical center, thereby decreasing generalizability of the results to broader populations. Additionally, data collection for this study was limited to the dermatology outpatient department (OPD), which means that children who presented in the pediatric OPD were not included in the analysis. Lastly, the study did not assess the severity of the identified skin disorders, which is crucial in understanding the impact of the disease on the affected children's quality of life.

# Acknowledgement

The authors would like to extend their appreciation to the patients and their families for their participation in this study & express sincere gratitude to the staff for their invaluable assistance.

#### REFERENCES

- Prindaville B, Antaya RJ, Siegfried EC: Pediatric dermatology: past, present, and future. Pediatr Dermatol. 2015, 32:1-12.. 10.1111/pde.12362. Epub 2014 Jul 21.
- Miotto IZ, Bessa VR, Vasconcelos LBA, Samorano LP, Rivitti-Machado MC, Oliveira ZNP: Pediatric dermatoses pattern at a Brazilian reference center. J Pediatr (Rio J. 2021, 97:211-218. 10.1016/j.jped.2020.02.002.
- Vakirlis E, Theodosiou G, Apalla Z, Arabatzis M, Lazaridou E, Sotiriou E, Lallas A, Ioannides D: A retrospective epidemiological study of skin diseases among pediatric population attending a tertiary dermatology referral center in Northern Greece. Clin Cosmet Investig Dermatol. 2017, 3:99-104. 10.2147/CCID.S130126.
- Shrestha R, Shrestha D, Dhakal AK, Shakya A, Shah SC, Shakya H: Spectrum of pediatric dermatoses in tertiary care center in Nepal. Nepal Med Coll J. 2012, 14:146-8.
- Sharma NK, Garg BK, Goel M: Pattern of Skin Diseases in Urban School Children. Indian J Dermatol Venereol Leprol. 1986, 52:330-331.
- Bonthu, I., Purushothaman, S., & Vukkadala, N. D. (2020: Clinico-etiological study of paediatric dermatoses in tertiary health care hospital in East-coast Andhra Pradesh, India. Int J Res Dermatol. 6:456-62.
- Karthikeyan K, Thappa DM, Jeevankumar B: Pattern of pediatric dermatoses in a referral center in South India. Indian Pediatr. 2004, 41:373-7.
- Sacchidanand S, Sahana MS, Asha GS, Shilpa K: Pattern of pediatric dermatoses at a referral centre. Indian J Pediatr. 2014, 81:375-80. 10.1007/s12098-012-0904-8
- Negi KS, Kandpal SD, Parsad D: Pattern of skin diseases in children in Garhwal region of Uttar Pradesh. Indian Pediatr. 2001, 38:77-80.
- Ranaivo IM, Sendrasoa FA, Andrianarison M, Sata M, Raharolahy O, Ralandison DS, et al.: Clinicoepidemiology of Skin Diseases in Children Seen at the University Hospital Center Morafeno, Toamasina, Madagascar. Dermatol Res Pract. 2021:6456448.
- Nanda A, Al-Hasawi F, Alsaleh QA: A prospective survey of pediatric dermatology clinic patients in Kuwait: an analysis of 10,000 cases. Pediatr Dermatol. 1999, 16:6-11. 10.1046/j.1525-1470.1999.99002.x
- Jain N, Khandpur S: Pediatric dermatoses in India. Indian J Dermatol Venereol Leprol. 2010, 76:451-4. 10.4103/0378-6323.69034
- Podder I, Agarwall K, Anurag A: Pattern and Distribution of Pediatric Dermatoses and their Association with Parental Socioeconomic Status: A Single-center Experience from India. Indian J Paediatr Dermatol. 2022, 23:214. 10.4103/ijpd.ijpd\_1\_22
- Patel K, Desai B: Pediatric dermatoses encountered in dermatology outpatient department of a teaching institute. Int J Contemp Pediatr. 2016, 1178:84. 10.18203/2349-3291.ijcp20163652

- Pathak R, Shrestha S, Poudel P, Marahatta S, Khadka DK: Association of socio-demographic factors and personal hygiene with infectious childhood dermatoses. Skin Health Dis. 2023, Feb 10;3(3):e219.
- Singh R, Tiwari VK: The prevalence and pattern of pediatric dermatoses in a tertiary care center at Garhwal, Uttarakhand, India. Int J Contemp Pediatr. 2019, 6:56-62. 10.18203/2349-3291.ijcp20185002
- Jahan R, Khanal S, Shrestha S, Parajuli N: Skin Diseases in a Pediatric Hospital of Nepal. Dermatol Res Pract. 2021:6619936. 10.1155/2021/6619936
- Fofana Y, Traore B, Dicko A, Faye O, Berthe S, Cisse L, et al.: [Epidemio-clinical profile of dermatoses in children receiving dermatological consultation in the Department of Dermatology at the National Center for Disease Control in Bamako (Mali)]. Pan Afr Med J. 2016, 25:238.
- Amin A, Fasih S, Raziq MA, Ghaffar A, Humayun A, Ahmad M: Pattern of Skin Diseases at Bahawal Victoria Hospital, Bahawalpur. Pak J Med Health Sci. 2023, 25:277-277.
- Chitapur UG, Athanikar SB, Kikkeri NN, Prabhu SR: A Clinical Study of the Pattern of Dermatoses among Schoolgoing Children Attending a Tertiary Care Center in North Karnataka. Indian J Paediatr Dermatol. 2022, 23:225. 10.4103/ijpd.ijpd\_6\_22
- Saini S, Yadav D, Kumar R: Clinicoepidemiological Study of Prevalence and Pattern of Dermatoses among Patients of Pediatric Age Group in Southeast Region of Rajasthan. Indian J Paediatr Dermatol. 2020, 21:119. 10.4103/ijpd.IJPD\_154\_18
- Medasani V, Oudeacoumar P, Chitralekhya R, Misra SK: Prevalence of paediatric dermatoses among patients attending Dermatology outpatient department in a tertiary care hospital in Puducherry. Int J Res Dermatol. 2018, 24:368-75.
- Haroon MA, Dhali TK, Siddiqui S, Khan FA: Knowledge and Awareness Regarding Leprosy and its Treatment Among Leprosy Patients in a Tertiary Care Hospital. Int Arch Biomed Clin Res. 2017, 23:36-41.
- Mavoori A, Sriram D, Pamar S, Bala S: An epidemiological study of pattern of dermatoses in paediatric age group at a tertiary care teaching hospital in South India. Int J Res Dermatol. 2020, 21:392. 10.18203/issn.2455-4529.IntJResDermatol20201077
- Poudyal Y, Ranjit A, Pathak S, Chaudhary N: Pattern of Pediatric Dermatoses in a Tertiary Care Hospital of Western Nepal. Dermatol Res Pract. 2016:6306404. 10.1155/2016/6306404
- Balai M, Khare AK, Gupta LK, Mittal A, Kuldeep CM: Pattern of pediatric dermatoses in a tertiary care centre of South West Rajasthan. Indian J Dermatol. 2012, 57:275-8.
- Sardana K, Mahajan S, Sarkar R, Mendiratta V, Bhushan P, Koranne RV, et al.: The spectrum of skin disease among Indian children. Pediatr Dermatol. 2009, 26:6-13. 10.1111/j.1525-1470.2008.00814.x
- Wenk C, Itin PH: Epidemiology of pediatric dermatology and allergology in the region of Aargau, Switzerland. Pediatr Dermatol. 2003, 20:482-7. 10.1111/j.1525-1470.2003.20605.x