

**ORIGINAL RESEARCH**

# Dermatological shifts: Exploring the landscape of paediatric skin conditions

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**ABSTRACT**

**Background:** Paediatric dermatology addresses skin conditions and care for individuals from infancy through puberty, a stage marked by significant physiological and psychological changes. Children's skin differs from adult skin in permeability, immunity, and secretions. Newborn skin issues, though rarely fatal, are a common source of parental concern and contribute to a significant portion of dermatology visits. This study aims to analyse the patterns and factors contributing to paediatric dermatoses and identify prevalent conditions. **Methods:** An observational study was conducted at a tertiary care hospital in Jaipur over 18 months, involving 350 paediatric patients (0-18 years). The study included detailed medical histories, physical examinations, and categorization of dermatoses into infective and non-infective groups, further divided into 24 subcategories. Data was analysed using SPSS software for statistical analysis. **Results:** Out of 350 patients, 60.57% were male and 39.43% female, with the majority (63.71%) in the 13-18 years age group. Non-infective dermatoses (58.3%) were more common than infective ones (41.7%). Eczematous disorders (14.3%) were the most prevalent non-infective conditions, while fungal infections (19.4%) were the most common infective dermatoses. Atopic diathesis was predominant among eczematous disorders (3.1%) and tinea capitis was the most frequent fungal infection (7.5%). **Conclusion:** The study highlights a shift towards non-infective dermatoses, possibly due to improved hygiene and healthcare. The findings underscore the need for enhanced paediatric dermatology education and public health initiatives to address evolving dermatological needs in children.

**Keywords:** Atopic diathesis, paediatric, non-infective dermatoses

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**INTRODUCTION**

Paediatric dermatology treats conditions and skin care needs of people from infancy through puberty, a comparatively brief stage of life during which major changes in physiology and psychology occur. The skin of an adult is very different from that of a child.<sup>[1]</sup> Its anatomy shows that it is thinner, less hairy, less cornified, and produces less perspiration and sebaceous secretions physiologically. Its physical characteristics include greater permeability and less developed immune system.<sup>[2]</sup>

Although they are seldom fatal, newborn skin problems are disproportionately stressful and frequently cause parents to seek care from general doctors, paediatricians, and dermatologists.

As some particular diseases, including staphylococcal scalded skin syndrome and newborn dermatoses, are only prevalent in the paediatric age range, paediatric dermatoses have gained their own independent

standing within the discipline of dermatology. There is a need to give this issue greater attention because the prevalence of paediatric dermatoses is steadily on the rise.<sup>[3]</sup> Patients in the paediatric age group make up nearly thirty percent of dermatology visits overall.<sup>[4]</sup> According to several research, children's skin disease incidence ranges from 9% to 37%. While acne vulgaris is the most frequent skin condition among adolescents, cutaneous diseases in children include pyoderma, tinea capitis, scabies, molluscum contagiosum, pediculosis capitis, dermatitis, and responses to bug bites throughout the school years.<sup>[4]</sup> Ecological, environmental, racial, and genetic variables, dietary condition, climatic exposure, cultural taboos, socioeconomic level, personal cleanliness, high family size, and overcrowding are among the many risk factors for the development of skin disease in the paediatric population.<sup>[5]</sup>

The treatment, prognosis, and clinical appearance of

paediatric and adult dermatoses varies significantly, necessitating a distinct perspective. Studying the frequency and pattern of skin conditions as well as their socioeconomic connections in a community would be an appropriate epidemiological approach. This is particularly crucial for preventing skin infections. There are very few population-based studies that assess children's skin disease prevalence. This study aims to find out pattern of pediatric dermatoses and the factors contributing to these, as well as to know the common dermatoses in pediatric age group.

## METHODS

The study was conducted in the Department of Dermatology, Venereology, and Leprosy at a Tertiary Care Hospital in Jaipur. This observational study spanned 18 months and included a sample of 350 paediatric patients, ranging from 0 to 18 years of age, regardless of sex. The inclusion criteria focused on paediatric patients with various dermatoses, while patients unwilling to provide consent or undergo necessary investigations were excluded. The study received time-bound approval from the Scientific and Ethical Committee of the institution.

The methodology involved a comprehensive approach: detailed medical history was recorded, including patient age, gender, and specific details about the duration, frequency, course, manifestations, aetiology, and family history of skin conditions. A thorough general and systemic physical examination was performed to exclude any systemic illnesses, with particular attention given to both primary and secondary skin lesions, as well as the examination of nails and hair. Paediatric dermatoses were categorized into Infective and Non-infective groups, which were further subdivided into 24 distinct disease categories. These included bacterial, fungal, ectoparasitic, viral, and exanthem infections; disorders of sweat glands and acneiform conditions; acquired, epidermal, and congenital nevi; immune-bullous diseases; eczematous conditions; hypersensitivity reactions; papulo-squamous diseases; photo-dermatoses; connective tissue disorders; keratinization disorders; drug reactions; genodermatoses; nutritional and metabolic disorders; hyperpigmentation; hypopigmentation; hair and nail disorders; and vascular malformations.

For statistical analysis, results were presented using tables, pie charts, and bar graphs, with data analysed

using the Statistical Program for Social Sciences (SPSS) software version 20.0. Quantitative data were evaluated through mean, median, and standard deviation. The sampling technique employed was convenience sampling.

## RESULTS

350 paediatric patients, both male and female, who were 18 years of age or younger, were included in this study. Among them, there were a greater number of male patients (n = 212, 60.57%) than females (n = 138, 39.43%). Female's mean age was 12.5 years with median of 14 years. The average age of men was 12.9 years and a median age of 15 years. The most common age group of presentation was 13-18yrs of age (n=223, 63.71%), followed by 8-12yrs of age group (n=61, 17.42%), 1-7 yrs of age group (n=50, 14.28%). Males were more in number than females in each age group with a ratio of 1.53:1. (Table I, Figure I)

Non-infective dermatoses constituted the majority in our study n=204 (58.3%) and infective dermatoses constituted n=146 (41.7%) among dermatoses. Eczematous Disorders (n=50, 14.3%) were the most prevalent dermatoses among non-infective dermatoses, followed by Acneiform and Sweat Gland Disorders (n=48, 13.7%). Fungal infections (n=68, 19.4%) and ectoparasitic infestations (n=44, 12.6%) were the most prevalent types of infectious dermatoses. (Table II, Figure II).

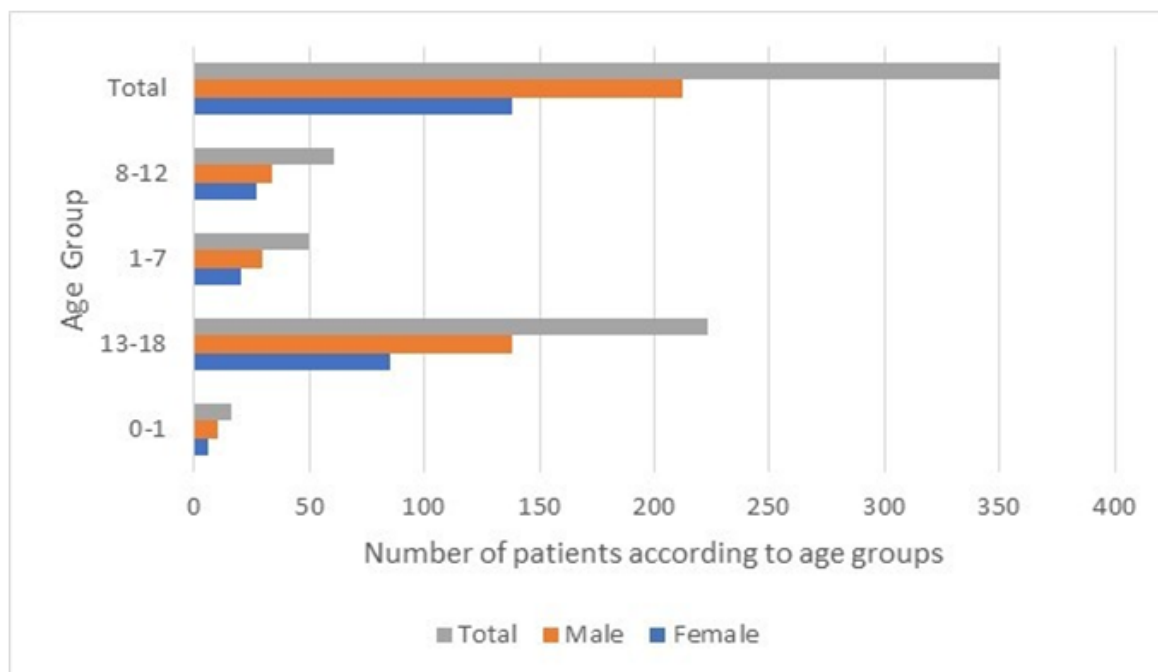
Among the eczematous disorders, Atopic diathesis was the commonest (n=11, 3.1%). (Table III, Figure IIIa). Acne vulgaris was the commonest (n=42, 12%) among Acneiform and sweat gland disorders. (Table III, Figure IIIb).

Among Fungal infections, Tinea capitis was the most common (n=26, 7.5%), followed by Tinea Corporis (n=13, 3.7%). (Table III, Figure IVa). Scabies was the most common (n=43, 12.3%), followed by pediculosis capitis (n=1, 0.3%), among the the ectoparasitic infestation. (Table III, Figure IVb).

In children under 7 years, ectoparasitic infestations were the most common dermatoses. For those aged 8-12 years, both eczematous and ectoparasitic disorders were frequently observed. In the 13-18 years age group, acneiform and sweat gland disorders, eczematous disorders, and hair and nail disorders were the most common (Figure IIIa, Figure IIIb, Figure V).

**TABLE I: Frequency and Demographic Distribution**

	Age group					Chi Square	P value
	0-1 years	13-18 years	1-7 years	8-12	Total		
Female	6	85	20	27	138	0.7893	0.852035
Male	10	138	30	34	212		
Total	16	223	50	61	350		

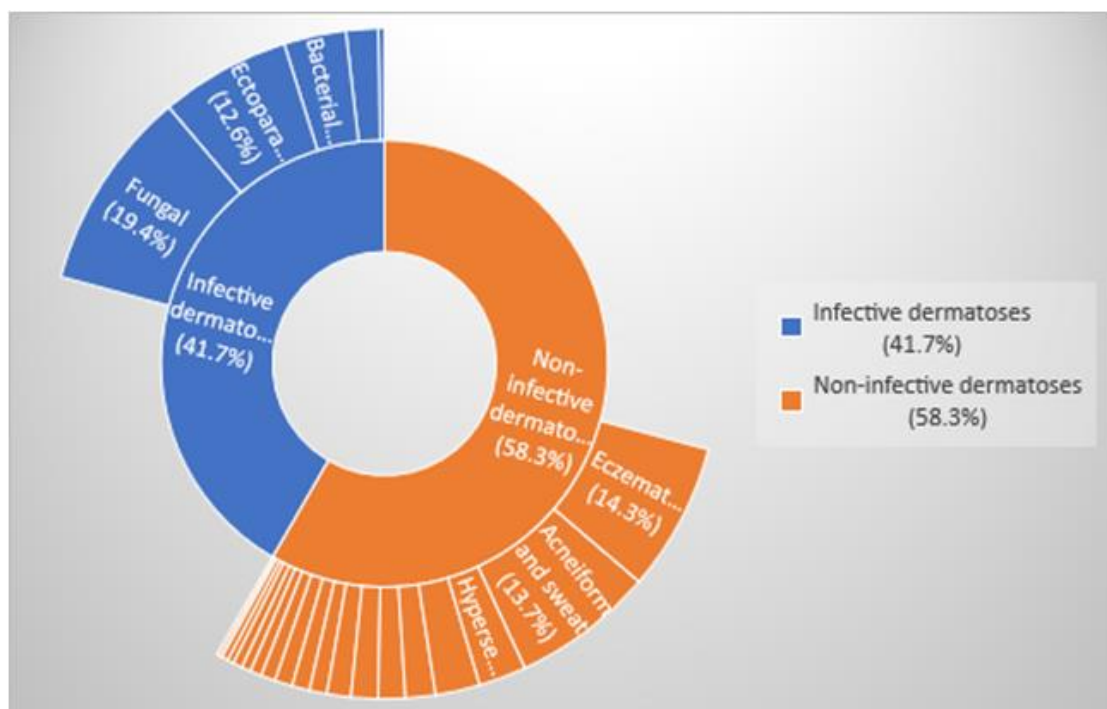


**FIGURE I: Age group and Total number of Males and Females wise Distribution**

**TABLE II: Age Group wise Distribution of Infectious and Non-infectious Dermatoses**

	Fem ale	Ma le	Tot al	Fem ale	Ma le	Tot al	Fem ale	Ma le	Tot al	Fem ale	Ma le	Tot al	Tot al	Perce nt age
Infective Dermatoses	5	7	12	14	14	28	12	12	24	21	61	82	146	41.7%
Bacterial Infections		1	1	3	2	5	3	1	4	5	6	11	21	6.0%
Ectoparasitic Infestation	3	3	6	8	4	12	4	7	11	4	11	15	44	12.6%
Fungal infection	1	2	3	2	3	5	5	3	8	11	41	52	68	19.4%
Viral Exanthem	1	0	1	0	1	01	0	0	0	0	0	0	2	0.6%
Viral Infection	0	1	1	1	4	5	0	1	1	1	3	4	11	3.1%
Non-Infective Dermatoses	1	3	4	6	16	22	15	22	37	64	77	141	204	58.3%
Acneiform and sweat gland Disorders	0	0	0	0	0	0	0	2	2	15	31	46	48	13.7%
Acquired Nevus	0	0	0	0	0	0	0	0	0	2	1	3	3	0.9%
Congenital Nevus	0	0	0	0	1	1	0	0	0	4	0	4	5	1.4%
Epidermal Nevus	0	0	0	0	0	0	1	0	1	0	0	0	1	0.3%
Immunobullous disorder	0	0	0	0	0	0	0	0	0	0	1	1	1	0.3%
Eczematous Disorder	0	0	0	3	6	9	5	7	12	17	12	29	50	14.3%
Hypersensitivity Disorder	1	1	2	2	2	4	0	2	2	6	2	8	16	4.6%
Papulosquamous Disorder	0	0	0	0	1	1	2	1	3	2	3	5	9	2.6%

Photodermatoses	0	0	0	0	0	0	0	0	0	1	2	3	3	0.9%
Connective Tissue Disorder	0	0	0	0	0	0	2	0	2	0	0	0	2	0.6%
Disorders of keratinization	0	0	0	0	0	0	1	0	1	2	1	3	4	1.1%
Drug reaction	0	0	0	0	0	0	1	2	3	1	2	3	6	1.7%
Genodermatosis	0	0	0	0	0	0	0	0	0	1	1	2	2	0.6%
Nutritional Disorder and Metabolic Disorder	0	0	0	1	3	4	0	1	1	2	2	4	9	2.6%
Hyperpigmentation Disorder	0	0	0	0	0	0	0	0	0	5	1	6	6	1.7%
Hypopigmentary Disorder	0	0	0	0	1	1	0	3	3	1	3	4	8	2.3%
Hair and Nail Disorder	0	0	0	0	0	0	1	4	5	1	9	10	15	4.3%
Miscellaneous disorders	0	0	0	0	1	1	0	0	0	4	5	9	10	2.9%
Vascular Malformation	0	2	2	0	1	1	2	0	2	0	1	1	6	1.7%
Grand Total	6	10	16	20	30	50	27	34	61	85	138	223	350	100%



**FIGURE II: Percentage wise distribution of Infective & Non-infective dermatoses**

**TABLE III: Type of Disease Age Group and Percentage wise Distribution****(A) Infective dermatoses**

Diagnosis	Age Group					Percentage
	0-1	1-7	8-12	13-18	Total	
<b>Bacterial Infection</b>						
Acute paronychia				1	1	0.3%
Early congenital syphilis	1				1	0.3%
Folliculitis		1	2	2	5	1.4%
Furuncle			1	2	3	0.9%
Impetigo		1	1	3	5	1.4%
Lupus Vulgaris				1	1	0.3%
Perioritis		2			2	0.6%
Pyoderma		1		1	2	0.6%
Tuberculosis Verrucosa Cutis				1	1	0.3%
<b>Ectoparasitic Infestation</b>						
Scabies	6	12	10	15	43	12.3%
Pediculosis Capitis			1		1	0.3%
<b>Fungal Infections</b>						
Tinea capitis		1		1	2	0.6%
Candidal intertrigo	1		1	2	4	1.1%
Pityriasis Versicolor			1	5	6	1.7%
Pityrosporum Folliculitis				2	2	0.6%
Tinea Capitis	1	1	3	19	24	6.9%
Tinea Corporis		3	1	9	13	3.7%
Tinea Cruris			1	9	10	2.9%
Tinea faciei	1			4	5	1.4%
Tinea incognito			1	1	2	0.6%
<b>Viral Exanthem and infections</b>						
Maculopapular Rash	1				1	0.3%
Viral Exanthem		1			1	0.3%
Herpes Simplex	1				1	0.3%
Herpes Zoster			1		1	0.3%
Molluscum Contagiosum				2	2	0.6%
Varicella		1			1	0.3%
Wart(Plane)		2		1	3	0.9%
Wart(Plantar)		2		1	3	0.9%
	12	28	24	82	146	41.7%

**(B) Non-Infective Dermatoses**

Diagnosis	Age Group					Total	Percentage
	0-1	1-7	8-12	13-18			
Acne Vulgaris (GR I)			1	8	9	2.6%	
Acne Vulgaris (GR II)				17	17	4.9%	
Acne Vulgaris (GR III)				5	5	1.4%	
Acne Vulgaris (GR IV)			1	10	11	3.1%	
Acne (Truncal)				1	1	0.3%	
Acneiform Eruption				1	1	0.3%	
Miliaria Rubra				3	3	0.9%	
Millia				1	1	0.3%	
<b>Acquired Nevus</b>							
Backers Nevus				2	2	0.6%	
ILVEN				1	1	0.3%	
<b>Congenital Nevus</b>							
Faun Tail Nevus				1	1	0.3%	
Melanocytic Nevus				1	1	0.3%	
Nevus of Ito		1			1	0.3%	
Nevus of Ota				1	1	0.3%	
Speckled Lentiginous Nevus				1	1	0.3%	
<b>Epidermal Nevus</b>							
Verrucous Epidermal Nevus			1		1	0.3%	
<b>Immuno-Bullous Disorder</b>							
Epidermolysis Bullosa				1	1	0.3%	

Diagnosis	Age Group				Total	Percentage
	0-1	1-7	8-12	13-18		
<b>Eczematous Disorders</b>						
Keratolysis Exfoliativa				2	2	0.6%
Atopic Diathesis		6	3	2	11	3.1%
Diaper Dermatitis		2			2	0.6%
Juvenile Spring Eruption			1		1	0.3%
Lichen Simplex Chronicus			1	1	2	0.6%
Palmoplantar Eczema			1	2	3	0.9%
Pityriasis Alba			2	2	4	1.1%
Plantar Eczema			2	4	6	1.7%
Pompholyx			1	4	5	1.4%
Seborrheic Capitis			1	8	9	2.6%

Seborrhoeic Dermatitis		1		4	5	1.4%
<b>Hypersensitivity Disorder</b>						
Acute Urticaria			1	4	5	1.4%
Blister beetle dermatitis				1	1	0.3%
Chronic Urticaria		1	1		2	0.6%
Chronic Urticaria with angioedema				1	1	0.3%
Insect Bite Hypersensitivity		1		1	2	0.6%
Papular Urticaria	2	2		1	5	1.4%
<b>Papulosquamous Disorder</b>						
Extragenital LSEA		1			1	0.3%
Guttate Psoriasis				1	1	0.3%
Lichen planus				2	2	0.6%
Pityriasis Rosea			1	2	3	0.9%
Pityriasis Rubrapilaris			1		1	0.3%
Psoriasis Vulgaris			1		1	0.3%
<b>Photodermatoses</b>						
Photodermatitis				1	1	0.3%
Polymorphic light eruption				2	2	0.6%

Diagnosis	Age Group				Total	Percentage
	0-1	1-7	8-12	13-18		
<b>Connective Tissue Disorder</b>						
Linear Morphea (En Coup de Sabre)			1		1	0.3%
Systemic Lupus Erythematosus			1		1	0.3%
<b>Disorders of Keratinization</b>						
Congenital Ichthyosis			1		1	0.3%
Erythrokeratoderma Variabilis				1	1	0.3%
Keratosis pilaris				1	1	0.3%
Porokeratosis				1	1	0.3%
<b>Drug Reactions</b>						
Acute generalised exanthematous pustulosis			1		1	0.3%
Fixed Drug Eruption			1	1	2	0.6%
Maculopapular Drug Rash				1	1	0.3%
SISTEN			1	1	2	0.6%
<b>Genodermatoses</b>						
Darriers Disease				1	1	0.3%
Tuberous Sclerosis				1	1	0.3%
<b>Nutritional and Metabolic Disorders</b>						
Acrodermatitis Enteropathica		2			2	0.6%
Aphthous Ulcer				1	1	0.3%
Dysebacea				1	1	0.3%
Lichen Amyloidosis				1	1	0.3%
Phrynoderma			1	1	2	0.6%
Xerosis		2			2	0.6%

<b>Hyperpigmentary Disorders</b>						
Freckles				1	1	0.3%
Melasma				2	2	0.6%
Moles				1	1	0.3%
Periorbital Hyperpigmentation				1	1	0.3%
TSDf				1	1	0.3%
<b>Hypopigmentary Disorders</b>						
Focal vitiligo		1	2	3	6	1.7%
Linear Focal Elastolysis				1	1	0.3%
Vitiligo Vulgaris			1		1	0.3%
<b>Hair and Nail Disorders</b>						
Premature Graying of Hair				1	1	0.3%
Alopecia Areata			4	1	5	1.4%

Androgenetic Alopecia				4	4	1.1%
Female pattern hairloss				1	1	0.3%
In grown toe nail				1	1	0.3%
Keratosis pilaris atrophicans faciei				1	1	0.3%
Nail Lichen Planus				1	1	0.3%
Plantar Tylosis			1		1	0.3%
<b>Miscellaneous Disorders</b>						
Corn				3	3	0.9%
Hirsutism				3	3	0.9%
Keloid		1			1	0.3%
Pruritus				3	3	0.9%
<b>Vascular Tumor and Malformations</b>						
Hemangioma	2	1			3	0.9%
Port wine stain			1		1	0.3%
Pyogenic Granuloma			1	1	2	0.6%
<b>Grand Total</b>	<b>4</b>	<b>22</b>	<b>37</b>	<b>141</b>	<b>204</b>	<b>58.3%</b>

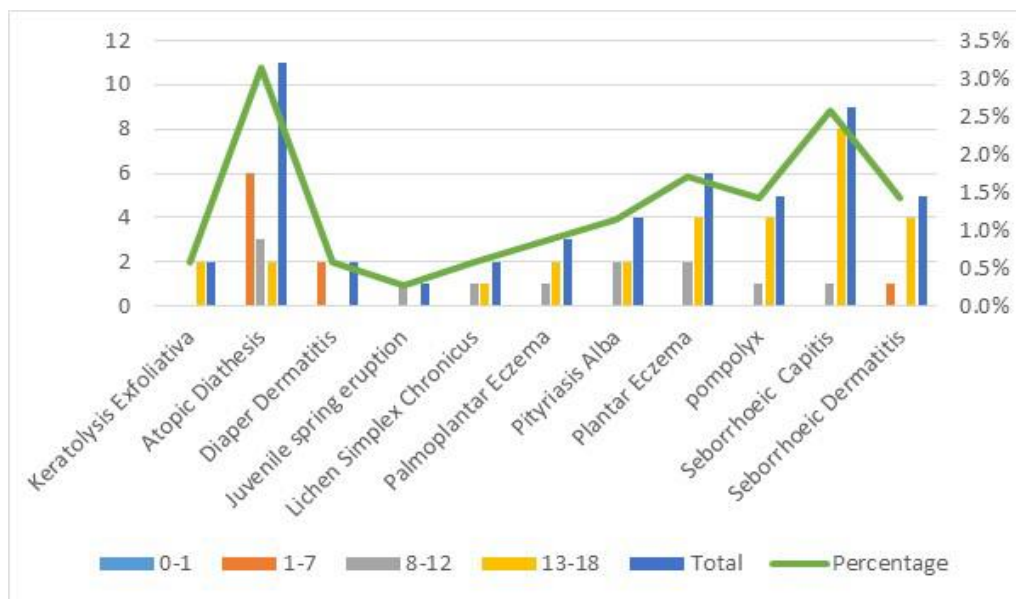


FIGURE III a: Age Group and frequency wise distribution of Eczematous Disorders

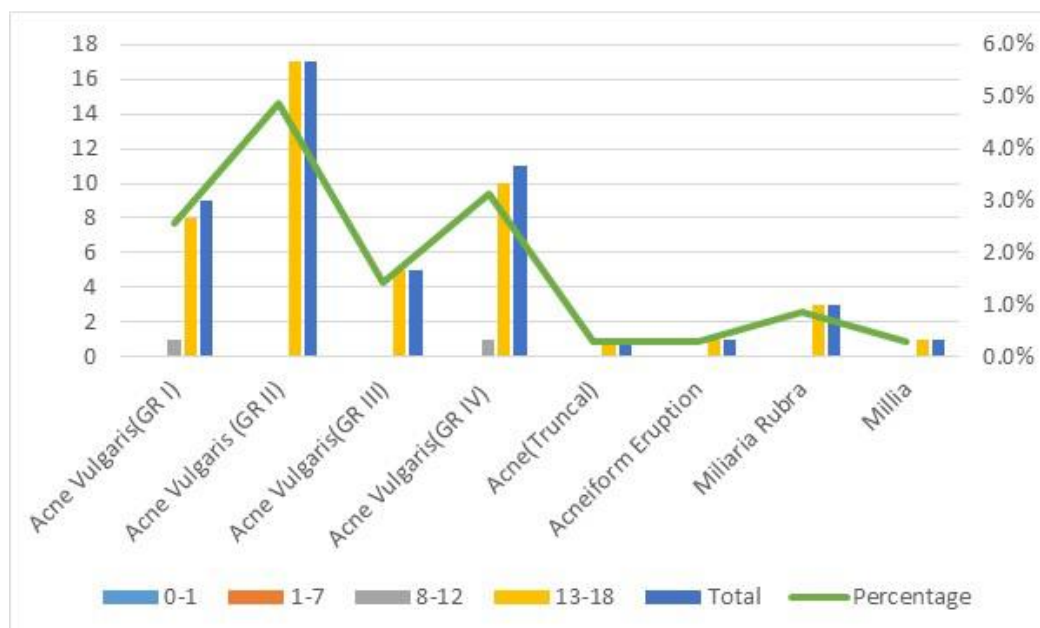
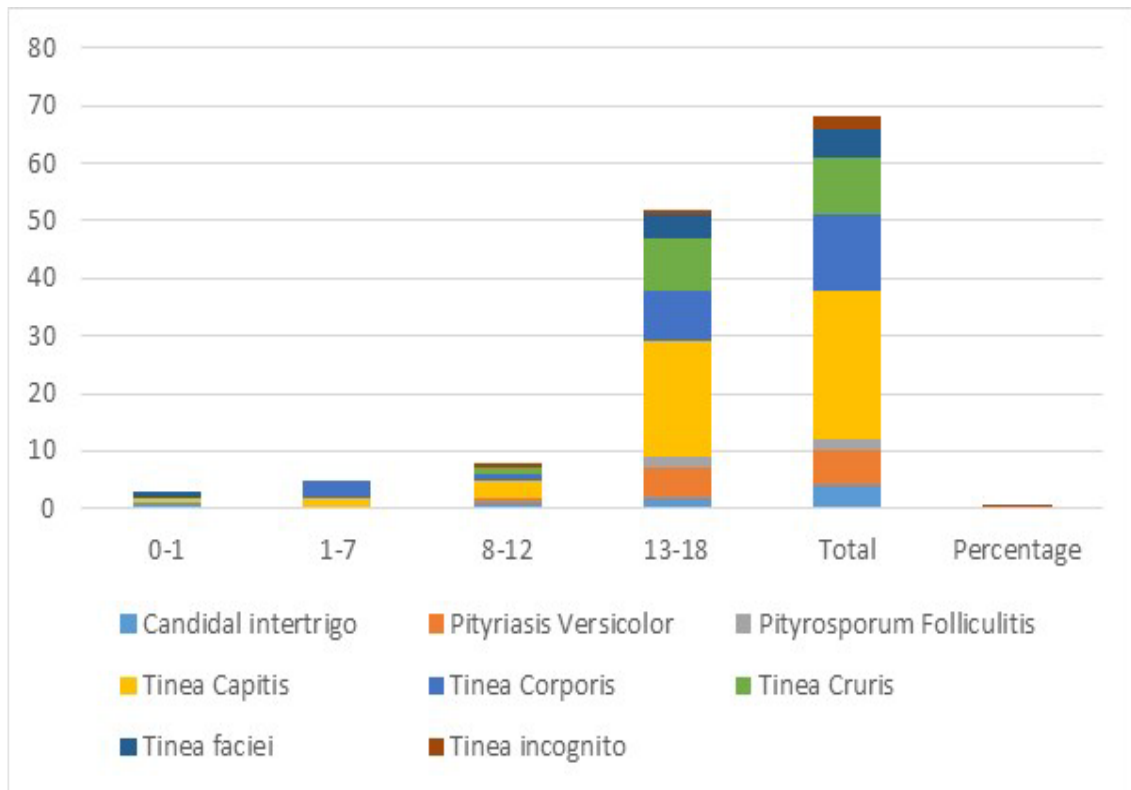
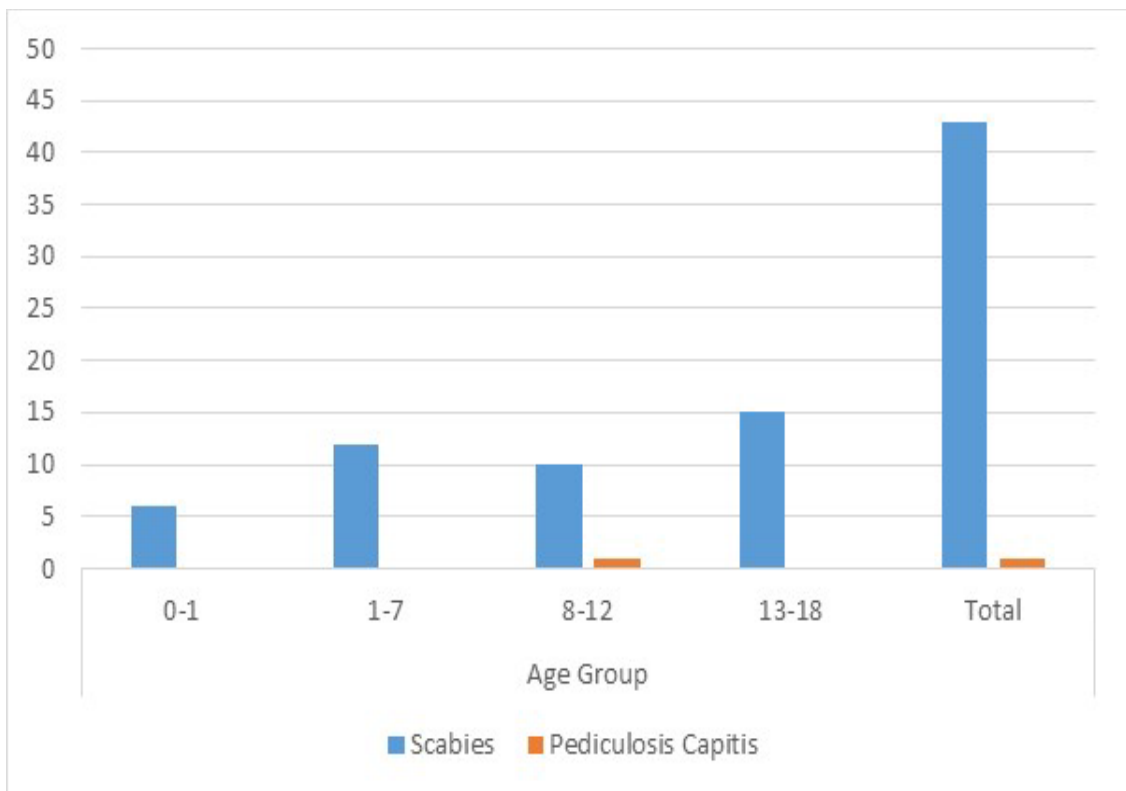


FIGURE III b: Age Group and frequency wise distribution of Acneiform and sweat gland disorders

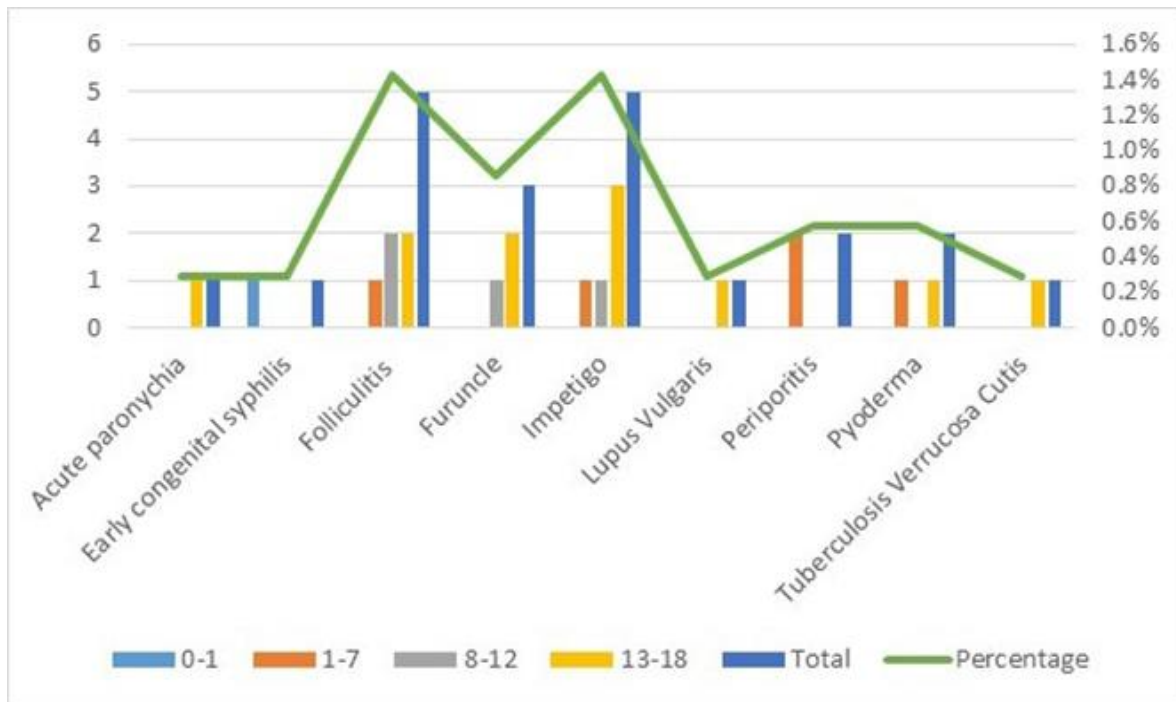




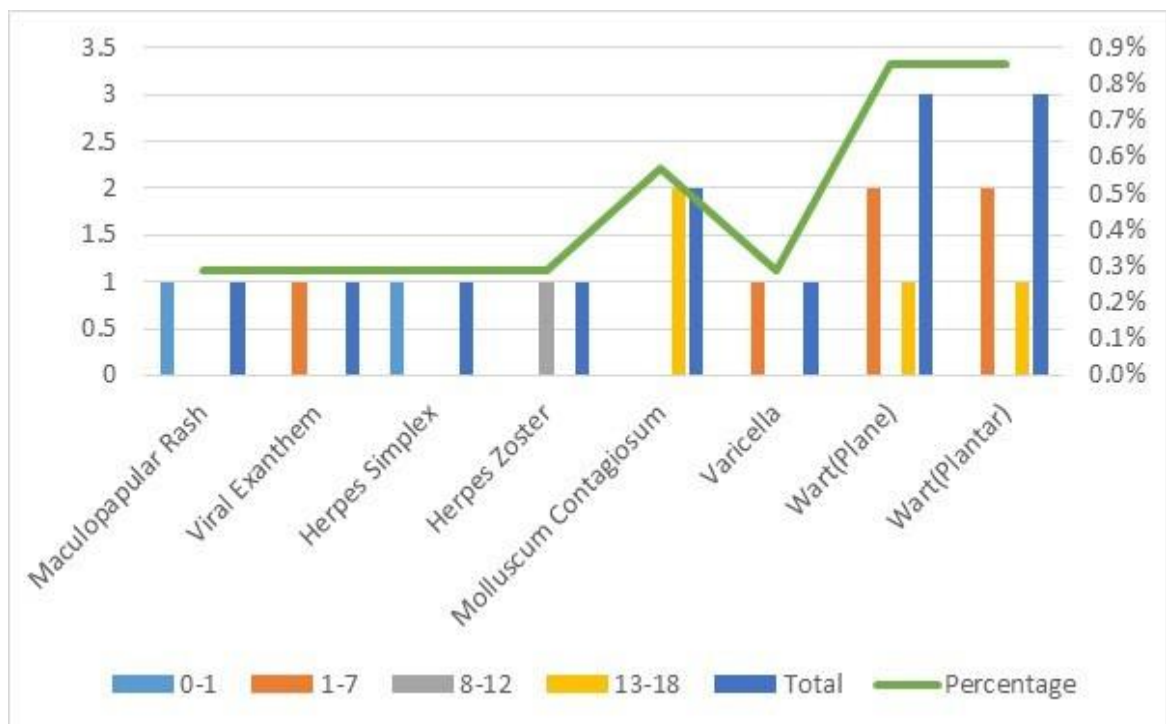
**FIGURE IV a: Age Group and frequency wise distribution of Fungal Infections**



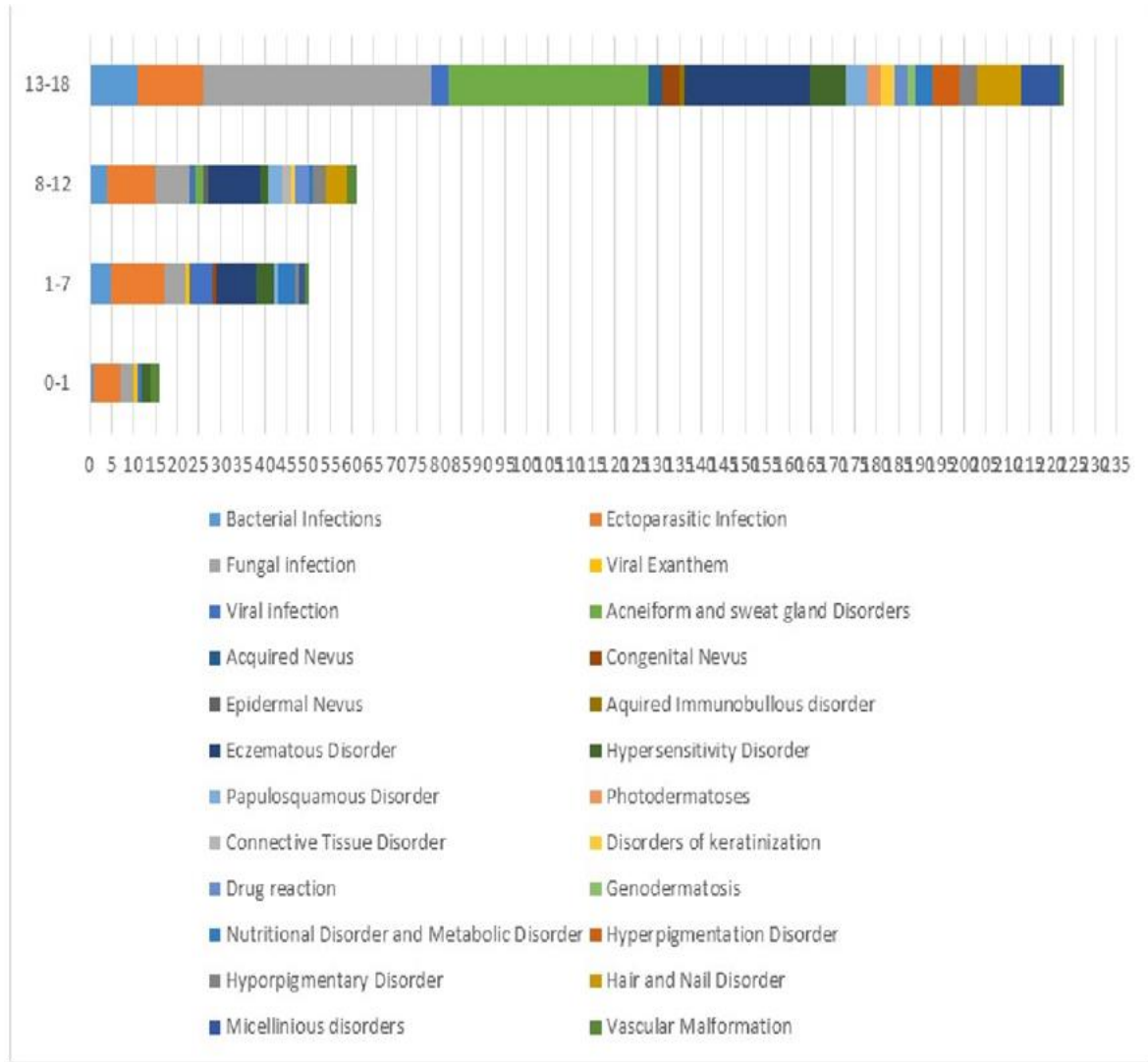
**FIGURE IV b: Age Group and frequency wise distribution of Ectoparasitic Infestation**



**FIGURE IV c: Age Group and frequency wise distribution of Bacterial Infections**



**FIGURE IV d: Age Group and frequency wise distribution of Viral Infection**



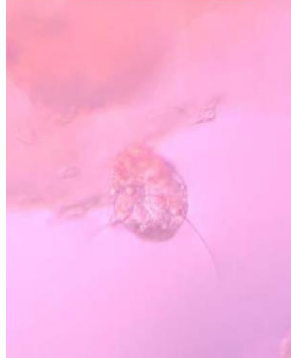
**FIGURE V: Age group and frequency wise distribution of dermatoses**



**Diaper dermatitis**



**Plantar eczema**



**Scabies**



**Pediculosis capitis**



**Inflammatory tinea capitis**



**Candidal intertrigo**



**Lupus vulgaris**





**Pityriasis alba**

## DISCUSSION

In the paediatric age range, skin disorders are the main public health concern. Children's immune system is still developing, making them more vulnerable to infections and infestations. Males outweighed females in our research by a ratio of 1.53:1, which is comparable to Javade et al.'s 2015 study, which reported a M:F ratio of 1.4:1.<sup>[3]</sup> The majority of our patients (n = 223,63.71%) were in the 13–18-year age range. Saini et al. (2020–21) reported nearly identical results (n = 516,51.6%).<sup>[6]</sup> In our study non-infective dermatoses were slightly more common (n=204,58.3%) as compared to infective dermatoses. (n=146,41.7%). Similar findings (53.7%) were noted by Saini et al, 2020-21.<sup>[6]</sup> Increased knowledge of the contagious nature of infectious dermatoses, the value of cleanliness, better hygiene, better nutrition, and the availability of clean water in the research region may all contribute to this shift towards non-infective dermatoses.<sup>[7]</sup>

Eczematous disorders were the most prevalent kind of non-infectious dermatoses (n = 50, 14.3%), followed by acneiform and sweat gland disorders (n = 48, 13.7%). Atopic dermatitis (n=11,3.1%) was the most prevalent eczematous condition (4.1%), nearly matching the findings of a research conducted by Saini et al. in 2020–21.<sup>[6]</sup> It was succeeded by plantar eczema (n=6,1.7%) and seborrhoea capitis (n=9,2.6%); research by Wenk and Itin found a roughly identical pattern.<sup>[8]</sup> Thirteen percent had diseases related to the sweat and sebaceous glands. Of them, (n=41,12%) in the adolescent age group had acne vulgaris. In our investigation, we found that 0.3% of bullous diseases were epidermolysis bullosa; Bonthu I et al., 2020 observed similar results (0.46%).<sup>[12]</sup> Pityriasis rosea (n=3,0.9%) was the most frequent papulosquamous condition, followed by psoriasis (n=2,0.6%) and lichen planus (n=2,0.6%). Polymorphic light eruptions were seen in n=2,0.6% of photodermatoses, which is less (2.5%) than what Lehmann et al. reported.<sup>[9]</sup> This discrepancy may be caused by the amount of direct sunlight exposure in

various geographic locations. In 0.6% of the cases with connective tissue diseases, linear morphea and systemic lupus erythematosus were seen. Among drug eruptions fixed drug eruption, steven johnson syndrome were noted in (n=2,0.6%) each. While V.S Reddy et al reported an incidence of drug eruption in 0.72% of their cases.<sup>[10]</sup>

N=9,2.6% of cases had metabolic and nutritional problems. The most prevalent nutritional dermatosis (n=2,0.6%) was acrodermatitis enteropathica. The most prevalent pigmentary condition in our patients (n=6,1.7%) was vitiligo. Hypersensitivity problems were seen in n=16,4.6%; Ghosh et al. 1995 found almost same results (4%) in their investigation.<sup>[11]</sup> Similar to research by Saini et al., 2020–21, papular urticaria and acute urticaria were the most frequent hypersensitivity diseases, occurring in 1.4% of cases each. Fungal infections were the most prevalent kind of infectious disease (n=68,19.4%). Infections with dermatophytes were seen in 16.1%. 3.1% of cases had non-dermatophytic infections identified. The most prevalent fungal infection (n=26,7.5%) was tinea capitis. Scabies was the most prevalent ectoparasitic infection (n=43,12.3%), followed by pediculosis (n=1,0.3%). This discrepancy can result from variations in the study's geographic locations, cultural backgrounds, and individual behaviours. Impetigo was the most prevalent bacterial infection (n=5,1.4%). Warts were the most prevalent kind of viral infection (1.8%), with molluscum contagiosum coming in second with 0.9% of cases.

It's crucial to be aware of the infectious nature of infective dermatoses and implementing preventive measures, such as proper hygiene practices and avoiding the sharing of personal items.

## CONCLUSION

This study highlights a shift towards non-infective dermatoses, potentially due to improved hygiene, nutrition, and healthcare access. The findings emphasize the need for enhanced paediatric dermatology training for healthcare professionals and

increased public health initiatives to address the evolving dermatological needs of children.

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