

## Original Research Article

# An epidemiological study of pattern of dermatoses in paediatric age group at a tertiary care teaching hospital in South India

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## ABSTRACT

**Background:** Various dermatoses like infections and infestations and other non-infective dermatoses like atopic eczema, pigmentary disorders, papulo-squamous disorders, hair disorders, genetic disorders, hemangiomas etc. affect children causing significant morbidity. The pattern of dermatoses varies from place to place due to differences in geography, climate, culture and socio-economic background. Prevalence of pediatric dermatoses in India are around 9% to 35%. This study is undertaken to know the pattern, incidence, prevalence, contributing factors and prognosis of dermatoses affecting paediatric age group attending Dermatology outpatient department in tertiary health teaching hospital in South India.

**Methods:** This is a prospective study; various skin disorders were studied in 1360 paediatric patients up to 18 years of age were studied for a period of 12 months from September 2017 to October 2018. Demographic data, general, systemic and cutaneous examination findings were recorded in a proforma for analysis and interpretation of data.

**Results:** There were 762 boys and 598 girls in total 1360 study population. The most common dermatoses were eczematous eruptions and dermatitis (22.57%), infections and infestations (20.8%), infestations (18.96%), hypersensitivity disorders (6.91%). The study showed no statistical differences between sex and age.

**Conclusions:** This study on epidemiological and clinical patterns emphasizes the need on training the management of common paediatric dermatoses to dermatologists, paediatricians for early treatment. Proper implementation of child health programmes and awareness programmes can be done based on such data or to treat them appropriately.

**Keywords:** Paediatric dermatoses, Epidemiology, Fungal infections, South India, Child health

## INTRODUCTION

Skin diseases in the paediatric age group are common problem encountered by dermatologists throughout the world including both rural and urban areas. There is huge variation in the pattern of dermatoses, with eczemas like atopic dermatitis, pityriasis alba being the most common dermatoses in developed countries and infections and infestations being most common in the developing countries.<sup>1</sup> About 30% of all visits to a dermatologist involve children.<sup>2</sup>

Skin diseases in the paediatric age group can be acute or chronic and recurrent. The chronic dermatoses like atopic dermatitis, psoriasis is associated with significant morbidity and psychological impact.<sup>3</sup> Paediatric dermatoses differ from adult dermatoses as there are significant differences in clinical presentation, treatment and course of disease. Dermatoses in children are influenced by socio-economic status, local climatic conditions, dietary habits of the region as compared to adults. Bacterial, fungal and viral infections are common in children during school going years. Most of the

dermatoses resulting from intrinsic genetic abnormalities have onset in the paediatric age-group like porphyrias and xeroderma pigmentosum.

Numerous clinico-epidemiological studies have been undertaken throughout the world including India to study the pattern of paediatric dermatoses. The prevalence of paediatric dermatoses in various parts of India ranges from 8.7% to 35% in school-based surveys.<sup>4</sup>

In spite of considerable prevalence of paediatric skin diseases, the existence of few studies on this subject across the world makes the planning of health actions difficult. The importance of this study lies in the need for an epidemiological survey of the prevalence of paediatric dermatoses in developing countries to help implement appropriate preventive measures to decrease their prevalence. This study aimed to estimate the prevalence of paediatric skin diseases in the Paediatric Dermatology Outpatient Clinic of a tertiary care teaching hospital in South India.

## METHODS

A single centre prospective and observational study was conducted for a period of one year with the primary objective being studying the prevalence of paediatric dermatoses in a tertiary care setting. 1360 children presenting with skin problems to Dermatology OPD of ESIC Medical College and Hospital, Sanathnagar, Hyderabad, of age less than or equal to 18 were included for the study after obtaining Ethical Committee approval. Written informed consent in a language known to them was obtained from the parents/guardian for including into the study and for photographs. Patients were grouped into four groups according to age group as follows: new-borns and infants (<12 months), toddlers and pre-schoolers (1 to 5 years), school going (6 to 12 years), and teenagers (>12 to 18 years).

A detailed history was taken with the help of a pre-designed proforma, which included information on age, gender, personal history, family history of atopy, clinical features, onset of lesions with duration, extent of involvement, details of previous treatment, any associated comorbid illnesses, birth history and immunisation history. A thorough general, cutaneous and systemic examination was done and arrived at definitive clinical diagnosis. Relevant investigations like KOH mount, Wood's lamp examination, diascopy, gram's stain, Tzanck test, haematological and biochemistry analysis and skin biopsy as needed were done where indicated. The following parameters were studied: sex and age distribution of dermatoses and distribution of dermatoses according to their percentage of frequency. Patients presenting with more than one dermatological condition were excluded from the study. Obtained data was tabulated, analysis and comparison were done with data of other studies. Data was entered into an Excel spreadsheet and analysed with the Statistical Package for

Social Sciences 15.0 software. Mean age was compared by using student's t test. The Chi-square and Fisher's exact tests were also used.

## RESULTS

1360 children attending Dermatology, Venereal and Leprosy Outpatient Department of our hospital were studied and analysed as follows. The incidence of paediatric dermatoses in our OPD is 8.25%.

Total number of boys were 762 (56%) and girls were 598 (44%). Ratio of boys: girls is 1.28:1 as depicted in Table 1.

**Table 1: Sex distribution.**

	No. of cases	Percentage (%)
<b>Boys</b>	762	56.02
<b>Girls</b>	598	43.98
<b>Total</b>	1360	100

308 (22.64%) cases were found in <1-year age group. 338 (24.85%) cases in 1 to 5 year age group, 289 (21.25%) in 6 to 12 year age group, 425 (31.25%) in the 12 to 18-year age group as shown in Table 2.

**Table 2: Age-wise distribution pattern.**

Age	Males	%	Females	%	Total
<b>&lt;12 months</b>	176	12.94	132	9.71	308
<b>1-5 years</b>	180	13.23	158	11.62	338
<b>6-12 years</b>	165	12.13	124	9.12	289
<b>&gt;12-18 years</b>	241	17.72	184	13.53	425
<b>Total</b>	762	56.02	598	43.98	1360

### *Pattern of paediatric dermatoses*

Majority of paediatric dermatoses belonged to eczemas both endogenous and exogenous accounting to 307 cases (22.57%), infections 283 cases (20.8%) accounting to second most common followed by infestations like scabies and pediculosis 258 cases (18.97%) (Table 3).

Endogenous eczemas like atopic dermatitis and seborrheic dermatitis accounts to 181 cases (13.3%) and 48 cases (3.52%) respectively. The frequencies of some eczemas were significantly ( $p < 0.01$ ) related to age; eczema including atopic, seborrheic, discoid and napkin dermatitis was significantly related to age with most of the cases were infants (Figure 1).

Bacterial infections being most common accounting to 155 cases (11.39%), followed by fungal infections 72 (5.29%) and viral infections 56 (4.12%) cases. Among

bacterial infections the most common infection was impetigo 92 (6.76%) followed by folliculitis (4.63%). The most common fungal infections seen were tinea capitis 33 (2.42%), candidiasis 21 (1.54%) and pityriasis versicolor 18 (1.32%). The most common viral infections noticed were molluscum contagiosum 24 (43%), warts 12

(21%), varicella 10 (18%) hand foot mouth disease 6 (11%) and pityriasis rosea 4 (7%) (Figure 2). Viral warts and varicella were more prevalent in school-age children, while molluscum contagiosum was more common in preschool-age children ( $p < 0.01$ ).

**Table 3: Distribution of various pediatric dermatoses.**

		Number of cases	%
<b>Infections</b>	Bacterial	155	11.39
	Fungal	72	5.29
	Viral	56	4.12
<b>Eczemas</b>	Atopic dermatitis	181	13.3
	Seborrheic dermatitis	48	3.53
	Pityriasis alba	32	2.35
	Juvenile plantar dermatosis	26	1.91
	Contact dermatitis	12	0.88
	Pompholyx	8	0.59
<b>Papulo-squamous disorders</b>	Lichen planus	4	0.3
	Lichen striatus	10	0.73
	Lichen nitidus	2	0.14
	Psoriasis	6	0.44
<b>infestations</b>	Scabies	210	15.44
	Pediculosis	48	3.53
<b>Pigmentary</b>	Vitiligo	28	2.06
	Freckles	12	0.88
<b>Vascular</b>	Hemangiomas	16	1.18
<b>Hair disorders</b>	Alopecia areata	8	0.59
	Premature canities	22	1.62
<b>Keratinization</b>	Ichthyosis	25	1.84
	Keratoderma	7	0.52
<b>Nevi</b>	Congenital melanocytic nevus	4	0.3
	Nevus depigmentosus	10	0.73
	ILVEN	2	0.15
<b>Nutritional</b>	Phrynodema	43	3.17
<b>Hypersensitivity disorders</b>	Urticaria	18	1.32
	Papular urticaria	76	5.59
<b>Disorders of sweat and sebaceous gland</b>	Acne	142	10.44
	Miliaria	30	2.20
<b>Connective tissue diseases</b>	Morphea	2	0.15
<b>Cutaneous adverse drug reactions</b>	SJS	4	0.3
<b>Miscellaneous</b>	Insect bite reaction	9	0.66
	Pyogenic granuloma	6	0.44
	Neonatal	8	0.59
	Corns and callosities	16	1.18
<b>Genodermatoses</b>		2	0.15

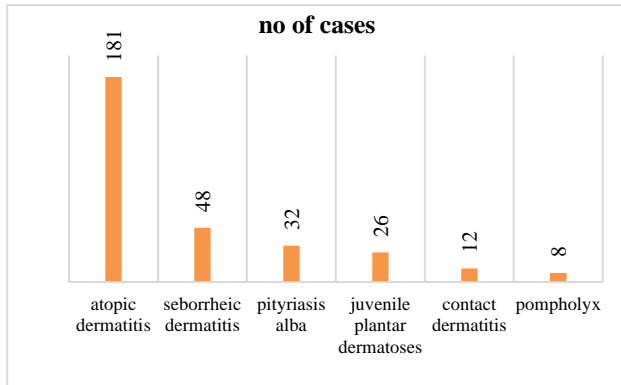
Among infestations 210 scabies cases (15.44%) were seen followed by 48 pediculosis capitis cases (3.52%). Among nutritional dermatoses 43 cases of phrynodema (3.16%) were seen.

94 cases (6.91%) of hypersensitivity disorders were seen out of which popular urticaria accounts to 76 cases (5.58%) and 18 cases (1.32%) were of urticaria.

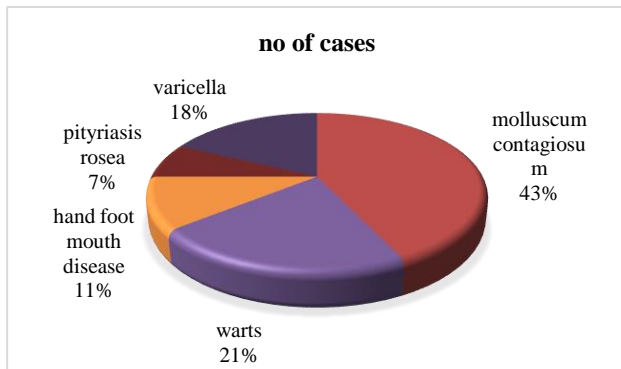
In the 12 to 18-year age group most common dermatoses noted was acne 142 cases (10.44%), 4 cases (0.3%) of cutaneous adverse drug reactions (Steven's Johnson syndrome) were seen Figure 4.

Among papulo-squamous disorders 10 cases (0.73%) of lichen striatus, 6 cases (0.44%) of psoriasis, 4 cases (0.3%) of lichen planus and 2 cases (0.14%) of lichen

nitidus (Figure 5) were noted. Among pigmentary disorders 28 cases (2.06%) of vitiligo and 12 cases of freckles (0.88%) were seen.



**Figure 1: Distribution of eczemas.**



**Figure 2: Distribution of viral infections.**



**Figure 3: Congenital melanocytic nevus.**

In the category of hair disorders 22 cases of premature canities (1.62%) were seen followed by alopecia areata 8 cases (0.59%).

In the present study, vitiligo was the most common pigmentary disorder noted. This was followed by freckles.

In present study papulosquamous disorders accounted for 2.8%, with lichen striatus (0.73%), psoriasis (0.44%), lichen planus (0.3%) and lichen nitidus (0.14%)



**Figure 4: Case of Stevens Johnson syndrome.**



**Figure 5: Lichen nitidus.**

## DISCUSSION

The clinical pattern of skin lesions in children varies from country to country and also within a country it varies from one place to another. It depends on external factors like seasonal variation, poverty, socio economic conditions, overcrowding and also on internal factors like nutritional status, immune status and vaccination status of the child.<sup>5</sup>

In our study male: female ratio is 1.28:1. A study done by Al-Mendalawi et al, shows male:female ratio was 1.29:1, which is in correlation with the present study.<sup>6</sup> Similarly



in studies conducted by Vora et al, Hassan et al, Sacchidanand et al, it was found that ratio of males is more than females, similar to the present study.<sup>7-9</sup>

In our study majority of pediatric dermatoses belong to eczemas (22.57%) followed by infections (20.8%) and infestations (18.97%). In studies done by Balai et al, sardana et al, infections were most common type followed by eczemas and hypersensitivity.<sup>10,11</sup>

Atopic dermatitis amounts to 13.3% of cases, followed by seborrheic dermatitis (3.53%) and pityriasis alba (2.35%). This was similar to studies conducted by Al-Mendalawi et al and Balai et al, Atopic dermatitis was the most common eczematous dermatitis similar to present study.<sup>6,10</sup> In a study conducted by Sardana et al atopic dermatitis was seen in 5.2%, which is consistent with the present study.<sup>11</sup> In a study conducted by Sharma et al, atopic dermatitis was seen 3.4%.<sup>12</sup> High frequency of atopic dermatitis and eczema may be related to local climate, dietary habits, genetics, or other unknown factors.

Among infections, bacterial infections were most common accounting to 155 cases (11.39%), followed by fungal infections 72 (5.29%) and viral infections 56 (4.12%). Among bacterial infections the most common infection was impetigo 92 (6.76%) followed by folliculitis (4.63%). This pattern of bacterial infections found in the present study is in correlation with the study done by Balai et al.<sup>10</sup> In present study, Impetigo was common among preschool and school age children which is consistent with the study of Hassan et al.<sup>8</sup>

The most common fungal infections seen were tinea capitis 33 (2.42%), candidiasis 21(1.54%) and pityriasis versicolor 18(1.32%). In a study done by Hassan et al, Karthikeyan et al and Al-Mendalawi et al, have found similar pattern of fungal infections, which is in correlation with the present study.<sup>6,8,13</sup>

The most common viral infections noticed were molluscum contagiosum 24 (43%), warts 12 (21%), varicella 10 (18%) hand foot mouth disease 6 (11%) and pityriasis rosea 4 (7%). Unlike present study, in studies conducted by Al-Mendalawi et al and Vora et al, warts are the most common viral infection which is followed by molluscum contagiosum.<sup>6,7</sup>

Among infestations 210 scabies cases (15.44%) were seen followed by 48 pediculosis capitis caese (3.52%). Karthikeyan et al, in his study observed 14.2% of scabies, which is in correlation with the present study. An epidemiologic study from Garhwal, Uttar Pradesh, showed that pediculosis capitis (22.6%) was the most common dermatoses, being three times more common in girls.<sup>13</sup>

In our study 94 cases (6.91%) of hypersensitivity disorders were seen out of which popular urticaria

accounts to 76 cases (5.58%) and 18 cases (1.32%) were of urticaria. Nanda et al and Sardana et al also noticed a frequent occurrence of papular urticaria compared to urticaria, while in some studies, urticaria has been reported to be more common than papular urticaria.<sup>11,14</sup>

In present study papulo-squamous disorders accounted for 1.61%, in Hassan et al, it was 1.8%.<sup>4</sup> In Karthikeyan et al it was 1.6%.<sup>13</sup>

In the present study nutritional dermatoses was seen in about 3.17%. In present study, phrynodema was the most common nutritional disorder. In a study conducted by Karthikeyan et al, nutritional dermatoses were seen in about 2.8%, which is in correlation with the present study.<sup>13</sup> Vora et al, in his study also found that the phrynodema was the most common nutritional disorder which is consistent with present study.<sup>7</sup>

## CONCLUSION

The present study was undertaken to determine the clinical and epidemiological pattern and prevalence of paediatric dermatoses in a tertiary care teaching hospital in South India. Skin diseases in paediatric age group are associated with significant morbidity and they have different clinical presentation from adult dermatoses. Their incidence can be brought down by improving nutrition and personal hygiene of children. Health and wellness of school going children reflects the health status of a community. Our study provides a preliminary baseline data for future epidemiological and clinical research. It helps to assess the changing trends of paediatric dermatoses.

A detailed knowledge about the pattern of paediatric dermatoses helps in early diagnosis and prompt management of common dermatoses at the root level helps in preventing infective complications and prevent over usage of antibiotics and steroids in the area concerned.

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