

Pattern of Pediatric Papulosquamous Disorders: A Clinicoepidemiological Study

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Abstract:

Background: Among wide spectrum of skin diseases in children papulosquamous disorders form quite a common group ranging from infections like syphilis to inflammatory diseases like lichen planus. They can present a vast array of clinical manifestations. So, these disorders in children require a separate window from adult dermatoses as there are important differences in clinical manifestations, treatment and prognosis.

Objective: This study aims to know the hospital-based prevalence of papulosquamous disorders in children less than 14 years and their clinical patterns with respect to age and sex distribution.

Materials and Methods: The present study included 204 children with papulosquamous disorders who attended DVL opd between January 2019 and January 2021. For all the patient's complete history clinical examination and routine investigations were done. Wherever needed special investigations like KOH mount, fungal culture and biopsy were carried out.

Results: Papulosquamous disorders constituted 1.79% of pediatric dermatoses in the study. Most common in 5 to 9 years age group and girls being affected more than boys. Psoriasis is the most common disease (25.49%) followed by pityriasis rosea (23.53%).

Conclusion: Papulosquamous disorders form a common group of dermatological disorders in children. The age, sex and seasonal variation play a role in occurrence, recurrence and exacerbation of these disorders. By studying the morphological characteristics of these diseases and differentiating them clinically helps in explaining the prognosis of the disease to the parents and alleviating their worry.

Key Word: papulosquamous, psoriasis, pediatric dermatoses, pityriasis rosea, syphilis

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I. Introduction

Epidemiology is the simplest and most direct method of studying the causes of diseases in humans and many contributions have been made by studies that have demanded nothing more than an ability to count, think logically and have an imaginative idea¹. "Dermatological problems constitute at least 30% of all outpatient visits to a pediatrician and 30% of all visits to a dermatologist involve children. Chronic dermatoses like psoriasis and lichen planus are associated with significant morbidity and psychological impact. The pattern of skin diseases in children is very much influenced by genetic, climate, external environment, dietary habits and socio-economic status.

Papulosquamous disorders during childhood can present a vast array of clinical findings. In children, these range from inflammatory skin diseases like lichen planus to infections like syphilis.

While some Papulosquamous disorders mimic each other and some present as atypical variants, a fine diagnostician's mind should be ready to navigate through it. Papulosquamous disorders in children require a separate window from adult dermatoses as there are important differences in clinical presentation, treatment and prognosis. Papulosquamous disorders during childhood can present a vast array of clinical findings.

Various epidemiological studies have been undertaken across the world including India to study the pattern of pediatric dermatoses and studies have been done on individual papulosquamous diseases. However, there are hardly any studies on papulosquamous disorders in children.

Thus, studying the epidemiology of papulosquamous disorders in children helps dermatologists to understand better the papulosquamous disorders in children and to be able to manage them appropriately.

Inclusion criteria:

1. The study included 204 consecutive patients who presented with papulosquamous disorders for the first time to the DVL OP.
2. Children below 14 years of age and both sexes were included in the study.

Exclusion criteria:

1. Children on treatment for papulosquamous disorders were excluded from the study.
2. Children who are treated and came with recurrence were excluded.

II. Methodology

After obtaining Ethical Clearance from Ethical Committee, Apollo Medical College, Chittoor; 204 cases were included in the study. Informants were parents or guardians accompanying the children. After taking an informed consent, a detailed history about onset, duration and evolution of lesions was taken. All patients were subjected to general physical examination, cutaneous examination including nail, hair, genitalia, mucosae and systemic examination to note down associated diseases and HIV. Findings were documented in the proforma.

Routine hematological investigations like estimation of hemoglobin, total count, differential count, erythrocyte sedimentation rate (Westergren’s method), urine examination, liver function tests and renal function tests were carried out for each patient. Special investigations like potassium hydroxide mount, culture and skin biopsy were done for relevant cases.

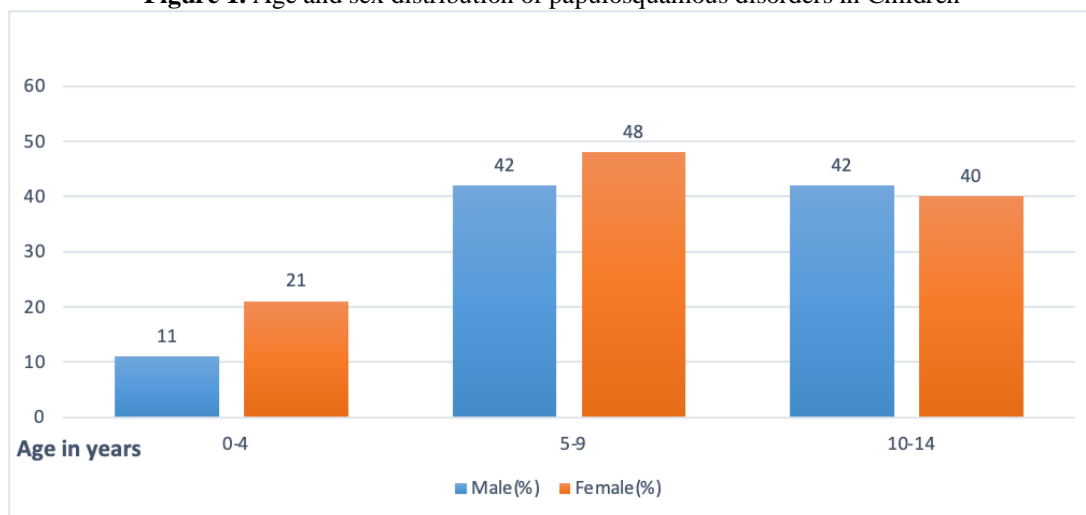
The results of the study were tabulated, analyzed and discussed. Simple proportions and percentages for comparing different variables like age, sex etc. was used. Outcome was expressed as the percentage of papulosquamous disorders among the study group as a whole and as the percentage of individual papulosquamous disorders.

III. Observations And Results

During the 24 months of study, pediatric patients constituted 13.16% of total op patients. Among them papulosquamous disorders were seen in 1.79%.

Male to female ratio was 0.85:1.0. The youngest patient was 1 month old and the oldest was 14 years. Highest percentage was seen among the 5-9 years age group.

Figure 1. Age and sex distribution of papulosquamous disorders in Children



The various papulosquamous disorders recorded in decreasing order of frequency as follows (Table 1)

Table 1. Frequency of various papulosquamous disorders

Sl.no	Papulosquamous disorder	No. of cases	Percentage
1	Psoriasis vulgaris	52	25.49%
2	Pityriasisrosea	48	23.53%
3	Lichen planus	43	21.08%
4	Lichen striatus	24	11.76%

5	Seborrheic dermatitis	23	11.27%
6	Lichen nitidus	11	5.39%
7	Pityriasis rubra pilaris	3	1.47%
Total		204	100

Table 2. Presentations of papulosquamous disorders during various seasons

Disease	Spring	Summer	Rainy	Autumn	Winter
	Jan –Feb	Mar-June	July-Aug	Sep –Oct	Nov-Dec
Psoriasis	7	11	13	12	9
Pityriasisrosea	5	7	9	15	12
Lichen planus	3	7	13	15	5
Lichen striatus	3	4	9	4	4
Seborrheic dermatitis	3	5	7	4	4
Lichen nitidus	1	4	3	3	0
pilaris	0	0	2	1	0
Total	22	38	56	54	34
Percentage	10.78	18.63	27.45	26.47	16.67

Psoriasis

The hospital-based prevalence of childhood psoriasis was 0.46%. Among 204 children with papulosquamous disorders 52(25.49%) had psoriasis. With a male to female ratio of 1.16:1.0. Majority of patients (82%) belonged to the age group of 5-14 years. Youngest patient was 3 years old. Lower extremities were the most common initial site affected in 48.7% cases, followed by the scalp, trunk and upper extremities.

Classical plaque psoriasis was the most frequent type of psoriasis at the time of presentation.

Table 3. Types of psoriatic lesions at the time of presentation

Type of psoriasis	No. of cases	Percentage
Chronic plaque	32	61.54%
Guttate	4	7.69%
Linear	0	0%
Scalp	5	9.62%
Palmoplantar pustulosis	11	21.15%
Total	52	100

Pustular psoriasis, linear psoriasis, psoriatic arthritis and erythrodermic psoriasis were not seen in this study. The nails were involved in 15.4% patients. Pitting was the most common nail change, followed by ridging. A positive family history was present in 10.25% patients. Koebnerization was observed in 41.02% patients. Pruritus was present in 84.6% children. Auspitz’s sign was positive in all the patients.

In only 5.1% patients were precipitating factors recalled that had brought about the onset of the disease or had been associated with exacerbation. Throat infection was the precipitating factor in both the patients, and both were guttate psoriasis. No systemic disorder is associated in any of the patients

Pityriasis rosea

In the study pityriasis rosea was seen in 48 (23.53%) children. There were 20 boys and 28 girls; male to female ratio was 0.7:1.0.

Their ages ranged from 4yrs to 14 years. The maximum percentage 47.2% of patients was seen in the 6 –11 years age group. An increased incidence in the autumn (30.6%) and winter (25%) seasons was observed. A prodrome of fever and upper respiratory tract infection preceding the skin manifestations was noted in 33.3% patients. 63.9% had pruritus.

None had H/O drug intake prior to the onset. Neither nail/mucosal involvement of pityriasis rosea was seen. Herald patch was seen in 41.7% patients, with trunk being the most common site. The median time between the appearance of a herald patch and eruption of widespread lesions was 6 days (range: 3–10 days).

Table 4. Percentage of various variants of pityriasis rosea.

Type of PR	No of cases	percentage
Classical	36	75%
Inverse	4	8%
Flexural	3	6%
Papular	4	8%
Localized	1	2%
Total	48	100

In this study, trunk (75%) was the most common site to be involved, followed by arms (61.1%), and thighs (16.7%). Face and neck together were involved in 8.2% of the patients. Generalized pityriasis rosea was seen in 13.85% patients.

Lichen planus

In this study, 43(21.08%) had lichen planus, thus the prevalence of childhood lichen planus in the OPD was 0.38%. Among the 204 children with papulosquamous disorders, 21.05% children had lichen planus. The male: female ratio was 0.9:1.0. Their ages ranged from 1year to 14 years, with a mean age of 7.5 years.

Table 5. Percentages of various types of lichen planus

Type of lichen planus	No. of cases	Percentage
Classic	35	81.40%
Linear	3	6.98%
Actinic	1	2.33%
Hypertrophic	4	9.30%
Total	43	100%

The site of onset was most commonly in one of the limbs 87.5%. Lesions first appeared on the lower extremities in 65.6% children, on upper extremities in 21.8% children and on trunk in 12.5% children.

Only cutaneous involvement was observed in 84.4% children, both skin and mucosa were involved in 15.6% children. The morphology of the mucosal lesions varied from violaceous papules on the lips to a classic lacy pattern on the buccal mucosa. The lesions were pruritic in 90.6%. 65.6% children had the Koebner’s phenomenon. Drug- induced, familial lichen planus was not found in this study. None had associated systemic diseases.

Lichen striatus

Lichen striatus constituted 11.76% (24 cases) of all papulosquamous disorders in this study. There were 15 girls and 9 boys. The male to female ratio was 0.6:1.0.

Table 6: Age and sex distribution of lichen striatus

Age in years	Boys (%)	Girls (%)	Total
0-4	2(22.2%)	3(20%)	6(25%)
5-9	3(33.3%)	11(73.3%)	14(58.3%)
10-14	4(44.4%)	1(6.6%)	5(20.83%)
Total	9	15	24

Limbs were the common sites to be involved, more commonly the upper limbs (66.7%). All the patients had unilateral presentation and were associated with pruritus. There was no history of atopy in any of the patients.

Seborrheic dermatitis

Seborrheic dermatitis was seen in 23 patients 11.27% in this study. There were 41.2% boys and 58.8% girls. 41.2% were infants and 58.8% were above 1 year of age. The youngest child was 1 month old and oldest was 13 years.

Table 7: Sites of involvement of Seborrheic dermatitis

Site	No of cases	percentage
Scalp	13	56.52%
Face	5	21.73%
Neck	1	3.13%
Trunk	2	9.38%
Intertriginous areas (axilla, groins, behind ears)	2	9.38%
Total	23	100

Extensive Seborrheic dermatitis was seen in 13 yrs. old HIV positive female patient.

Lichen nitidus

In the study, 11 (5.39%) children presented with lichen nitidus, with 4 (36.3%) boys and 7(63.6%) girls. The mean age of onset was eight years.

Table 8: Age and sex distribution of lichen nitidus

Age in years	Boys (%)	Girls (%)	Total
0-4	0	3(42.8%)	3(27.2%)
5-9	2(50%)	3(42.8%)	5(45.4%)
10-14	2(50%)	1(14.2%)	4(36.3%)
Total	4	7	11

Extremities were the commonest site involved. Koebner’s phenomenon was seen in 75% patients. There was no nail or mucosal involvement nor association with lichen planus.

Pityriasis rubra pilaris

In this study, 3 children presented with pityriasis rubra pilaris, thus accounting for 1.47 % of all papulosquamous disorders. The mean age was 6.5 years, range 4 years-9 years.

Table 9: Clinical findings and type of pityriasis rubra pilaris

Sl.no	Age/sex	Sites involved	Type of PRP
1.	9yrs/male	Abdomen, back, thighs	Type III
2.	4yrs/male	Trunk, extremities	Type IV
3.	7yrs/male	Trunk, extremities	Type IV

Type IV and Type III pityriasis rubra pilaris were present in the patients.

IV. Discussion

The prevalence of skin diseases amongst children in various parts of India has ranged from 8.7% to 35% in school-based surveys² [2004], In our study prevalence was 13.16%. In the study papulosquamous disorders constituted 1.79% of the pediatric dermatoses, in comparable to a study from Egypt³ [2012].

Table 10: Prevalence of papulosquamous disorders among pediatric dermatoses in different studies

Study	Prevalence of papulosquamous disorders
Study from Turkey [2008] 6	6.9%
Study from Egypt [2012] 7	1.5%

Present study	1.79%
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Psoriasis

The prevalence of childhood psoriasis (0.46%) was low when compared with Guletal⁴ [2008]. Psoriasis was the commonest papulosquamous disorder with a percentage of 25.49% with a male to female ratio of 1.16:1.0 comparable to Kumaretalstudy⁵(1.09:1.0). The mean age of onset was 8.5 years comparable to Denmark et al⁶study (8.1).

In the study lower extremities were the most common initial site affected in 48.7% patients, followed by scalp 30.8%, trunk 41.02% and upper extremities 33.3%. Involvement of face is seen in only 7.7% patients as children in the tropical environment are exposed to the ultraviolet (UV) rays of the sun all the time, and hence have less frequent involvement of sun-exposed sites. The two most common sites involved in various studies were legs and scalp, diaper area and scalp, and scalp and face respectively.

Classical plaque psoriasis was the most frequent type of psoriasis at the time of presentation 61.54% patients, as observed in almost all previous studies, although the percentage varies. Moreover, genetic and environmental factors may also play an important role, so that children in India tend to manifest the established plaque form of the disease rather than the transient guttate form.

In the study, palmoplantar psoriasis is observed in 21.15% patients comparable to the study by Kumaretal⁵ [2004], the soles were the most frequent site of onset after the legs and scalp. This may be due to the habit of walking barefoot or wearing open sandals in India, leading to a degree of koebnerization at these friction-prone sites, especially in children who are generally more active.

There seems to be no positive correlation between the early age of onset, severity of involvement, and family history of disease in Indian children with psoriasis. Whether onset in childhood predicts a more severe form of psoriasis is a matter of controversy, it may cause significant morbidity particularly if it keeps relapsing¹⁰.

Systemic treatments as well as phototherapy have limited use in children due to cumulative dose effects of drugs, low acceptance, and risk of gonadal toxicity. More evidence-based data is needed about the effectiveness and long-term safety of topical, phototherapy and systemic therapies in children¹⁰.

Limited data suggests that psoriasis in Indian children differs from western countries in having a later onset, equal sex distribution, infrequent facial involvement, low frequency of guttate lesions, more frequent involvement of the soles, and a low incidence of familial occurrence¹⁰.

Pityriasis rosea

In the study pityriasis rosea was the second common condition seen in 48 (23.53%) children with male to female ratio 0.7:1.0, which is different from a study by Gunduz et al¹ [2009] with 27 boys and 24 girls and male to female ratio of 1.1: 10 and similar to a study¹².

Table 11: Comparison of present study with Gunduz et al¹¹ [2009] study

	Gunduz et al 11 [2009]	Present study
Male to female ratio	1.1:1	0.7:1
Peak age of onset	6-11 yrs.	6-11 yrs
Pruritus	69%	63.9%
Herald patch	45%	41.7%
Prodrome	33%	33.3%

Lichen planus

It is uncommon in children and extremely rare in infants with most reports from the Indian subcontinent, suggesting that children from this region are more susceptible¹⁶.

It has been hypothesized that the rarity of associated autoimmune conditions, exposure to drugs and dental restorative materials, infective agents and other environmental triggers that have been known to initiate lichen planus may be responsible for the overall rarity of lichen planus in children¹⁷.

Table 12: Comparison of present study with Handa et al¹⁸[2002]

Study	Duration of study	Prevalence
Handa et al ¹⁸ [2002]	12.5yrs	2.5%
Present study	2yrs	0.38%

Nail involvement is rare in children while it occurs in 1-10% of adults. Indifferent studies^{18,19,21,22}, nail involvement has been found in up to 8.7% of pediatric patients.

The most common site of onset has been the limbs (87.5%), more commonly the lower limbs (65.6%). Limbs have been the site of onset in 41-70% patients across studies^{17,18,19,21,21,22}

The involvement of skin alone was observed in 84.4% children, and both skin and mucosa were involved in 15.6% children which was comparable with Handa et al¹⁸.

Lichen striatus

In the study, limbs were the most common sites involved, especially the upper limbs, comparable with Taieb et al²⁵[2006] study.

In the study, 75% patients of lichen striatus were seen during the rainy season and 25% during summer. There was no difference in the incidence of lichen striatus in regard to the season of the year in a study by Taniguchiet al²⁷[2004].

There was no association of lichen striatus with atopy in the study in contrast to Taniguchiet al²⁷[2004], who found a possible association.

Seborrheic dermatitis

In the study, a higher incidence was seen i.e. 11.18%. 41.2% patients were infants and 58.8% patients were above 1 year of age in the study. The youngest child was 1 month old and oldest was 13 years. Among the children with Seborrheic dermatitis, 35% had their onset in the first year of life. The reason is sebaceous secretion rates are high in neonates due to placental transfer of maternal androgens.

Seborrheic dermatitis affects males more often than females. In contrast, in the study, girls (58.8%) outnumbered boys (41.2%)

In the study, scalp (56.52%) was the most common site to be involved. In a Study by Foley et al²⁸[2003], the involvement of scalp was seen in 86% of the cases.

Generalized Seborrheic dermatitis was recorded in one HIV patient in our study.

Lichen nitidus

In the study, the mean age of onset was 8 years which was comparable with Lapin et al³⁰[1978]. Extremities were the most common site to be involved in the study similar to Zapataet al³¹[1981] study.

No association with lichen planus was seen in the study. Koebner's phenomenon was seen in eight of the cases. There was no nail or mucosal involvement.

Pityriasis rubra pilaris

In the study, 3 children presented with pityriasis rubra pilaris, thus accounting for 1.31% of all papulosquamous disorders. All the patients were males, and the mean age was 6.5 years, slightly lower than that of Yang et al³²[2008] who found the mean age to be 9.9 years. In the study both Type IV, juvenile onset circumscribed pityriasis rubra pilaris and type III type of pityriasis rubra pilaris occurred.

V. Conclusion

Of the various papulosquamous disorders, we observed only seven conditions in the present study.i.e. lichen planus, pityriasis rosea, Seborrheic dermatitis, psoriasis, pityriasis rubra pilaris, lichen striatus, lichen nitidus. More common in girls and 5 to 9 years age group. Majority of the cases were seen during rainy and autumn season. Psoriasis was common disorder observed, closely followed by pityriasis rosea, lichen planus and others. Whether onset in childhood predicts a more severe form of psoriasis is a matter of controversy, it causes significant morbidity particularly if it keeps relapsing. There was no drug induced papulosquamous disease / erythroderma observed during the period. Systemic treatments as well as phototherapy have limited use in children due to cumulative dose effects of drugs, low acceptance, and risk of gonadal toxicity. More evidence-based data is needed about the effectiveness and long-term safety of topical, phototherapy and systemic therapies in children.

Pictures:

	
<p>GUTTATE PSORIASIS</p>	<p>SEBORRHEIC DERMATITIS</p>
	
<p>LICHEN STRIATUS</p>	<p>ORAL LICHEN PLANUS</p>
	
<p>LICHEN PLANUS SHOWING WICKHAM'S STRIAE</p>	<p>SEBORRHEIC DERMATITIS ON FACE</p>

	
LOCALISED PITYRIASIS ROSEA	PITYRIASIS ROSEA SHOWING HERALD PATCH
	
EXTENSIVE SD IN HIV PATIENT	LICHEN NITIDUS SHOWING KOEBNERS PHENOMENON
	
PITYRIASIS RUBRA PILARIS	
	
PSORIASIS VULGARIS	LICHEN PLANUS

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