

CLINICAL AND EPIDEMIOLOGICAL STUDY OF PAPULOSQUAMOUS DISORDERS IN CHILDREN ATTENDING DERMATOLOGY DEPARTMENT

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ABSTRACT

Background: Papulosquamous disorders (PSD) are a distinct group of paediatric dermatoses with recurrent and chronic presentations. As they often mimic other conditions, early diagnosis is essential to avoid misdiagnosis. This study aimed to determine the hospital-based prevalence of PSD in children and evaluate its clinical patterns according to age, sex, and seasonal variation. **Materials and Methods:** This hospital-based cross-sectional observational study included 102 children from the MNR Medical College and Hospital, Sangareddy, between December 2017 and August 2019. A detailed history of the onset, duration, and evolution of the lesions was recorded. All patients underwent general, systemic, and cutaneous examinations (including nails, hair, genitalia, and mucosa). Routine haematological, urine, liver, and renal function tests were performed, along with special tests (KOH mount, culture, and biopsy). **Result:** Among the 102 patients with PSD, the most common diagnosis was lichen planus (LP) (29/102; 28.4%), followed by pityriasis rosea (26/102; 25.5%), seborrheic dermatitis (20/102; 19.6%), and psoriasis (17/102; 16.7%). Rare disorders included lichen striatus (4/102), pityriasis rubra pilaris (4/102), and lichen nitidus (2/102). The 5-9-year age group showed the highest frequency (41/102; 40.2%), with a near-equal male-to-female ratio (M: F = 1:1.1). LP predominantly involved the limbs (65.5%), pityriasis rosea occurred more frequently in autumn/winter (61.5%), seborrheic dermatitis presented mainly in infancy (75%), and psoriasis occurred in older children with frequent nail (41.2%) and scalp (52.9%) involvement. **Conclusion:** PSD was frequently observed in children between 5 and 9 years of age, with a higher prevalence noted among girls and during the rainy and autumn months. LP was the most common type, followed by pityriasis rosea, seborrheic dermatitis, and psoriasis.

INTRODUCTION

Diseases affecting the skin are an important health issue in the paediatric population and are linked with significant sickness. Paediatric skin conditions may be transient or chronic, often recurring, and lead to considerable healthcare visits.^[1] Skin conditions constitute about 30% of paediatric outpatient consultations, while nearly 30% of dermatology visits are related to children. In India, school-based surveys have shown that the prevalence of childhood skin diseases varies between 8.7% and 35%.^[2] Chronic dermatoses, such as psoriasis and lichen planus, not only cause long-standing physical morbidity but also lead to psychological stress in affected children.^[3] These psychological stresses include situations such as children experiencing embarrassment, low self-esteem, and social isolation, particularly when lesions are visible on exposed parts

of the body. These negative experiences can affect academic performance and interpersonal relationships.^[4]

The pattern of dermatoses is influenced by climatic factors, environmental exposures, dietary practices, and socioeconomic status.^[3] These patterns differ across countries, with infections, infestations, and nutrition-related disorders occurring more frequently in developing nations compared to developed ones. The occurrence of specific skin diseases among children in a community reflects the general health, hygiene practices, and standards of personal cleanliness within that society. In low- and middle-income countries, malnutrition, overcrowding, and inadequate access to healthcare can worsen the burden of skin disorders.^[5]

Papulosquamous disorders (PSD) are a heterogeneous group of skin disorders whose aetiology is mostly unknown. They consist of various

groups of inflammatory skin conditions characterised by eruptions that show scaly papules and plaques. Common PSDs include lichen planus, psoriasis, pityriasis rosea, seborrheic dermatitis, parapsoriasis and other less frequent variants.^[6] Since several PSDs share overlapping features or present in atypical forms, diagnosis may be challenging and requires careful clinical evaluation. Early recognition of these atypical variants avoids unnecessary investigations, including biopsies, and ensures timely management.^[7]

PSDs in children require separate focus compared to adults because of important differences in their clinical manifestations, prognosis, and therapeutic approach.^[3] Several epidemiological studies have been carried out worldwide, including in India, to examine the patterns of paediatric dermatoses, and research has also focused on specific PSD.^[8] Although numerous studies have been conducted on paediatric dermatoses in general, very few have focused completely on PSD in children.

The lack of community-based studies and the main dependence on hospital-based data limit our understanding of the true burden of PSDs in children. Studying the epidemiology of PSD in children helps dermatologists better understand and manage these conditions. Thus, this study aimed to determine the hospital-based prevalence of PSD in children aged 0-13 years and to investigate their clinical patterns with respect to age and gender distribution.

MATERIALS AND METHODS

This hospital-based cross-sectional observational study was conducted on children with PSD attending the outpatient Department of Skin and STD, MNR Medical College and Hospital, Sangareddy, from December 2017 to August 2019. The study was approved by the Institutional Ethics Committee, and written informed consent was obtained from the parents prior to enrolment.

Inclusion and exclusion criteria

Children with PSD were included, while those > 13 years of age and those on treatment for PSD were excluded.

Methods: During the study period, 17,866 outpatients attended the Department of Skin and STD, of which 4,475 (25.04%) were paediatric patients. Among the 4,475 children, 102 (2.28%) had PSD, and only these children were included in this study. A detailed history regarding the onset, duration, and progression of the lesions was obtained. Each patient underwent a general physical examination, along with a cutaneous assessment that included nails, hair, genitalia, and mucosae, as well as a systemic examination to identify associated conditions and HIV status. The observations were recorded in a structured proforma. Routine laboratory tests, including haemoglobin estimation, total and differential counts, erythrocyte sedimentation rate (Westergren's method), urine analysis, liver function tests, and renal function tests, were carried out for all patients. Additional tests, such as potassium hydroxide preparation, culture, and skin biopsy, were conducted whenever necessary. Patients were followed up during the study period to document the persistence or recurrence of lesions, when feasible.

Statistical analysis: Continuous variables are presented as means, while categorical variables such as age group, sex distribution, seasonal variation, and frequency of individual papulosquamous disorders are expressed as frequencies and percentages.

RESULTS

In the age group of 0–4 years, 14 (30.43%) males and 16 (28.57%) females were affected. The 5–9 years group had the highest frequency, with 19 (41.30%) males and 21 (37.50%) females. Among those aged 10–13 years, there were 13 (28.27%) males and 19 (33.93%) females [Table 1].

Table 1: Age and gender distribution of PSD

Age in years	Gender	
	Male (%)	Female (%)
0-4	14 (30.43%)	16 (28.57%)
5-9	19 (41.30%)	21 (37.50%)
10-13	13 (28.27%)	19 (33.93%)

The most common papulosquamous disorder was LP (28.43%), which predominantly occurred in autumn (37.93%), followed by summer (24.14%) and rainy seasons (20.69%). Followed by Pityriasis rosea (25.49%), with the highest frequencies in autumn (26.92%) and winter (26.92%). Seborrheic dermatitis 20 (19.61%) occurred most commonly in summer

(30%), followed by the rainy season (25%). Less frequent disorders included lichen striatus 4 (3.92%), seen mainly in the rainy season (75%), and pityriasis rubra pilaris (PRP) 4 (3.92%), reported equally in the rainy (50%) and autumn (50%) seasons. The least common was lichen nitidus 2 (1.96%), with one case each in the rainy and autumn seasons [Table 2].

Table 2: Seasonal distribution of PSD

Disorder	Frequency (%)	Spring (Jan-Feb)	Summer (Mar-Jun)	Rainy (Jul-Aug)	Autumn (Sep-Oct)	Winter (Nov-Dec)
LP	29 (28.43%)	1 (3.45%)	7 (24.14%)	6 (20.69%)	11 (37.93%)	4 (13.79%)
Pityriasis rosea	26 (25.49%)	0	6 (23.08%)	6 (23.08%)	7 (26.92%)	7 (26.92%)
Seborrheic dermatitis	20 (19.61%)	4 (20%)	6 (30%)	5 (25%)	2 (10%)	3 (15%)
Psoriasis vulgaris	17 (16.67%)	3 (17.65%)	4 (23.53%)	4 (23.53%)	2 (11.76%)	4 (23.53%)
Lichen striatus	4 (3.92%)	0	1 (25%)	3 (75%)	0	0
PRP	4 (3.92%)	0	0	2 (50%)	2 (50%)	0
Lichen nitidus	2 (1.96%)	0	0	1 (50%)	1 (50%)	0

LP affected children between 3-13 years, with a mean age of 8.9 years, while the mean onset age was 8.6 years and the gender distribution was nearly equal (M: F = 1.1:1). The classic type was predominant (82.9%), most commonly involving the limbs, particularly the upper extremities (58.6%). Mucosal lesions were uncommon and were limited to the lips

(3.4%) and buccal mucosa (6.9%). Nail involvement was observed in 17.2% of the patients, whereas palmoplantar involvement was rare (3.4%). Koebner's phenomenon (58.6%) and pruritus (89.6%) were frequent findings, and oral involvement was observed in 10.3% of patients [Table 3].

Table 3: Clinical features of LP in children

Parameter	Category	Findings
Age (years)	Range	3-13
	Mean	8.9
Sex	Boys	15 (51.7%)
	Girls	14 (48.3%)
	Male: female ratio	1.1:1
Age of onset (years)	Range	3-13
	Mean	8.6
Type	Classic	24 (82.9%)
	Linear	3 (10.3%)
	Annular	1 (3.4%)
	Actinic	1 (3.4%)
Sites of onset	Limbs	24 (82.7%)
	Lower extremities	7 (24.1%)
	Upper extremities	17 (58.6%)
	Trunk	5 (17.3%)
Mucosal involvement	Lips	1 (3.4%)
	Buccal mucosa	2 (6.9%)
Clinical findings	Nail involvement	5 (17.2%)
	Palmoplantar involvement	1 (3.4%)
	Koebner's phenomenon	17 (58.6%)
	Pruritus	26 (89.6%)
	Oral involvement	3 (10.3%)

Pityriasis rosea was observed mainly in the 6–11-year age group (53.8%), with a slight female predominance (M: F ratio 0.7:1). The back (88.5%), arms (61.5%), and chest (57.7%) were the most affected sites, with a herald patch noted in 38.5% of the patients and prodromal symptoms in 7.7%. Seasonal clustering was observed in autumn and winter (26.9% each).

Seborrheic dermatitis presented predominantly in infancy, with onset before 1 year in 65% of patients and mean onset at 16 months, again with a female predominance (M: F ratio 0.8:1). The scalp (95%)

was the most frequently involved site, followed by the face (35%) and trunk (25%). No distinct seasonal trends were detected.

Psoriasis affected children in the 1-13-year age range, with a mean age of 8.6 years, almost equal gender distribution (M: F ratio 0.9:1), and predilection for the scalp (47.1%), upper limbs (23.5%), and trunk (11.8%). Nail changes were present in 23.5% of patients, Koebner's phenomenon in 47%, and pruritus in 82.3% of patients. A seasonal rise was noted in the rainy, autumn, and winter seasons (58.8%) [Table 4].

Table 4: Clinical features of pityriasis rosea, seborrheic dermatitis, and psoriasis

Parameter	Pityriasis rosea (n=26)	Seborrheic dermatitis (n=20)	Psoriasis (n=17)
Sex (M: F)	11:15 (0.7:1)	9:11 (0.8:1)	8:9 (0.9:1)
Age	Range: 7 months-13 years	Onset: < 1 year in 65%	Range: 1-13 years
	Peak: 6-11 years (53.8%)	Mean onset: 16 months	Mean: 8.6 years Peak: 6-13 years
Common sites	Back: 23 (88.5%)	Scalp: 19 (95%)	Scalp: 8 (47.1%)
	Arms: 16 (61.5%)	Face: 7 (35%)	Upper extremities: 4 (23.5%)
	Chest: 15 (57.7%)	Trunk: 5 (25%)	Lower extremities: 3 (17.6%)
	Thighs: 10 (38.5%)	Intertriginous areas: 5 (25%)	Trunk: 2 (11.8%)

	Face and neck: 13 (50%)	Neck: 6 (20%)	-
Special features	Herald patch: 10 (38.5%)	Earlier onset in boys	Nail changes: 4 (23.5%)
	Prodrome of fever and URTI: 2 (7.7%)	Onset: 35% within 2 months	Koebnerization: 8 (47%)
	Pruritus: 16 (61.5%)	-	Pruritus: 14 (82.3%)
Seasonal trend	Autumn and Winter peaks (26.9% each)	Mostly in infancy, no seasonal peak	Higher in Rainy/Autumn/Winter (58.8%)

The most frequent form of psoriasis identified was chronic plaque psoriasis (58.8%), followed by scalp psoriasis (23.5%). Less common types included guttate psoriasis (11.8%) and linear psoriasis (5.9%), while no cases of pustular or erythrodermic psoriasis were noted. Nail changes were present in four patients (23.5%), and a positive family history was recorded in one case. Koebner phenomenon was seen

in eight patients (47%), and itching was reported by 14 patients (82.3%). Only two patients (11.8%) recalled triggering factors related to the onset or worsening of the condition, both linked to throat infection. One child was found to have an associated systemic illness (nephrotic syndrome). Auspitz's sign was positive in all cases [Table 5].

Table 5: Types of psoriasis

Type of psoriasis	Frequency (%)
Chronic plaque	10 (58.8%)
Guttate	2 (11.8%)
Linear	1 (5.9%)
Scalp	4 (23.5%)
Pustular	0
Erythrodermic	0

PRP was noted in four patients, all of whom were female, with ages ranging from 3 to 13 years (mean, 6.5 years). Most patients were of Type IV (three patients), and one was of Type III, with involvement of the trunk, limbs, and face. There was no involvement of the nails or mucosa.

Lichen striatus was observed in four children, with a slight female predominance (M: F ratio 1:3). The age range was 4-12 years (mean 8 years). All patients had

unilateral symptoms, commonly affecting the limbs (75%), and were associated with pruritus, although no history of atopy was noted. Lichen nitidus was documented in two children, with equal gender distribution (M: F 1:1). The age range was 6-8 years (mean 7 years). The lesions predominantly involved the forearms and extremities, with a positive Koebner phenomenon [Table 6].

Table 6: Rare PSD in children

Disorder	PRP (n=4)	Lichen striatus (n=4)	Lichen nitidus (n=2)
Sex (M: F)	0:4	1:3	1:1
Age (years)	Range	3-13	4-12
	Mean	6.5	8
Sites and features	Type IV: 3 patients, Type III: 1 case; Sites: trunk, limbs, face; No nail/mucosal involvement	All unilateral; Upper limbs (75%); Associated pruritus; No atopy	Forearms, extremities; Koebner's phenomenon: positive



Figure 1 Seborrheic dermatitis



Figure 2 - Linear Lichen planus



Figure 3 A - Lichen Striatus B - Guttate psoriasis



Figure 4 -Lichen Nitidus

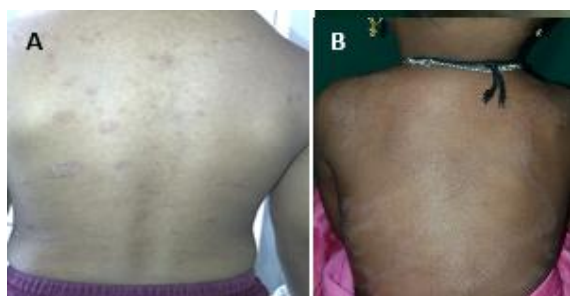


Figure 5 A -Pityriasis Rosea B - Pityriasis Rubra Pilaris

DISCUSSION

PSD in children represents a distinctive subset of paediatric dermatoses, often posing diagnostic and therapeutic challenges owing to its variable presentation and overlap with other conditions. This study aimed to analyse the hospital-based prevalence of PSD in children, with an emphasis on demographic distribution, seasonal trends, and clinical patterns across different subtypes.

In the present study, among 4,475 paediatric dermatology visits, the hospital-based prevalence of skin diseases was 25.04%, which is consistent with previous Indian school-based surveys (8.7-35%).^[2] The slightly lower value compared with school surveys may be due to the differences in setting, case mix, and referral bias. In the present study, PSD accounted for 2.28% of paediatric dermatoses (102 children), similar to prior reports where 1.66% in Balai et al. and 6.9% and Gul et al. and closest to

Vetrichevvel et al. (2.5%).^[9-11] Thus, confirming PSD as a small but consistent portion of childhood dermatoses.

Demographically, the present study reported a female predominance (54.9%), with most patients between 5-9 years, followed by 10-13 years. In terms of spectrum, LP (28.43%) was the most common, followed by pityriasis rosea (25.49%), seborrheic dermatitis (19.61%), and psoriasis (16.67%). In contrast, Vetrichevvel et al. reported 57.5% males and 32.4% pityriasis rosea.^[11] Adhicari and Das found that nearly half of their patients were in the 0-4-year age group, and 44.66% had seborrheic dermatitis and 25.24% had psoriasis.^[12] These variations are probably due to regional variations and healthcare-seeking patterns among various populations.

LP was rare in the present study but constituted the largest part of PSD (0.65% overall and 28.43% of PSD cases). LP in children is reported more from Indian settings, with paediatric frequencies ranging from 2.1-11.2%.^[13] In the present study, the classic variant predominated (82.9%), linear LP occurred in 10.3%, which is consistent with Ravikiran et al.'s study (14.4%).^[14] Mucosal involvement was rare (10.3%) in the present study, contradicting the 45% in Omal et al.'s study.^[15]

In the present study, pityriasis rosea accounted for 0.6% of all paediatric dermatoses, which was higher compared to the 0.2% reported by Karthikeyan et al.^[2] The age of affected children in this study ranged from 7 months to 13 years. In contrast, Kambil et al. observed that most patients (55%) were between 11 and 30 years of age, with the youngest being 16 months old.^[16] A higher occurrence was noted during the autumn (26.92%) and winter (26.92%) months, which is consistent with the findings of Vetrichevvel et al., who reported that pityriasis rosea was more common in winter.^[11]

In the present study, seborrheic dermatitis emerged as one of the most common PSDs, with a prevalence of 19.61%. In the present study, 65% of patients developed the condition within the first year of life, and 35% presented within the first two months. A survey reported seborrheic dermatitis in 13.2% of cases, most frequently at 2 months of age (53.0%), with the youngest and oldest affected ages being 1 month and 9 months, respectively.^[17] The male-to-female ratio in the present study was 9:11, which differs from the findings of Tamer et al., who observed a higher prevalence among males. Generalised seborrheic dermatitis was not observed, and none of the patients progressed to erythroderma, indicating that the condition was mostly localised and self-limiting in nature.

In the present study, childhood psoriasis accounted for 0.38% of paediatric dermatology outpatient visits and 16.7% of PSD. In a study by Bonigen et al., the prevalence of childhood psoriasis is estimated between 0.4% and 0.7%.^[18] Among PSD, psoriasis constituted 16.67%, which is higher than 11.1% noted by Vetrichevvel.^[11] The mean age of onset in

the present study was 8.6 years, which is similar to the findings of Zheng et al., who reported a mean age of 8.1 ± 4 years.^[19] In contrast, Manoharan et al. documented a later onset, with mean ages of 12.8 years in boys and 13.8 years in girls.^[20] Thus, indicating that characteristics of the disease prevalence vary with geographical location.

In the present study, the scalp was the common initial site of psoriasis (47.1%), followed by the extremities and trunk. PRP was observed in four children (3.92%) with PSD, and all patients were female, with a mean age of 6.5 years. This is similar to the study by Bronckers et al., who reported that scalp psoriasis occurs frequently and is severe in nature.^[21] Vetrichevvel et al. reported 10.2% of PRP cases, while Yang et al. reported an average age of 9.9 years.^{11,22} Type IV juvenile-onset circumscribed PRP (75%) was the most common, followed by type III (25%) in the present study. Similar predominance of type IV was reported by Yang et al. (85.7%).^[22] Lichen nitidus was observed in 2 (1.96%) patients, and the M: F ratio in the present study was 1:1, whereas Sun et al.'s study reported a male predominance (10:1).^[23] The range of age was 6-8 years, whereas Kataria et al. reported 8-12 years as their age range.^[24] Extremities were most commonly affected in the present study, while both Sun et al. and Kataria et al. observed the arm, forearm, trunk, and genitalia were the sites most commonly involved.^[23,24]

LP was the common subtype, followed by psoriasis, seborrheic dermatitis, and pityriasis rosea. Seasonal clustering and age-specific predilections were evident, underscoring the importance of early recognition and accurate diagnosis of this condition. Careful follow-up and timely management are essential for improving outcomes in affected children.

Limitations: This was a single-centre, hospital-based study with a small sample size, which may limit the generalisability of the findings to a larger population.

CONCLUSION

PSD was frequently observed in children aged between 5 and 9 years, with a higher prevalence noted among girls and during the rainy and autumn months. The most common subtypes include LP, PRP, seborrheic dermatitis, psoriasis, pityriasis rosea, lichen striatus, and lichen nitidus. Chronic plaque psoriasis was the predominant psoriasis subtype, and type IV was the most common form of PRP. Early recognition and accurate diagnosis can reduce mismanagement, and long-term follow-up is essential for recurrent cases. Future studies should explore genetic, environmental, and psychosocial factors to better understand preventive and therapeutic strategies.

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