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Original Research Article

Pattern of Paediatric Dermatoses in a Tertiary Level Hospital in Lucknow-A Prospective Observational Study

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Abstract

Introduction: Diseases of the skin are quite common in the paediatric age group. Children present to the hospital OPD with varied forms of skin diseases with a pattern and presentation that is different from adults. The aim of this study was to study the prevalence and pattern of skin diseases in the paediatric population attending the skin OPD of a tertiary care hospital in Lucknow.

Materials and Method: This study was conducted at a tertiary care hospital in Lucknow. 400 children who attended the skin OPD were enrolled in the study. Elucidation of history, clinical examination and lab investigations were done to arrive at a clinical diagnosis. Any possible association factors were studied.

Results: Infestations (25%) were the commonest disease encountered. Scabies topped the list among all skin diseases (20.75%). Skin diseases were most commonly noted in school children of 8-12 years age group (44.75%). A higher family size (6-10 members) presented with more skin ailments (69.25%) as compared to a family size with lesser members. Seasonal trends were witnessed wherein infestations (42%) and papulo-squamous conditions (30%) were significantly higher in winters whereas vesiculo-bullous conditions (34%) were significantly higher in summers as compared to other seasons.

Conclusions: This study has provided a general idea of patterns of presentation of skin ailments at the skin OPD in children. Preventive measures can be devised based on possible associations and trends observed which can reduce the morbidity by significant levels.

Keywords: Infestations, Skin Disease, Scabies, Family Size, Squamous Conditions

Introduction

Dermatological disorders are a cause of major health problem in the paediatric age group and are associated with significant morbidity. The prevalence of paediatric dermatoses in various parts of India has ranged from 8.7% to 35% in school based surveys [1]. Most skin disorders were seen in the preschool age group (1-5 year,44.94%), followed by school children age group (5-12 years, 29.60%) and infants (25.46%) [1-6]. Males are more common than females (1.07:1).

Dermatological disorders constitute approximately 30% of all outpatient visits to a paediatrician and approximately 30% of all visits to the dermatologist involve

children [2]. According to Nelson, the age group of paediatric patients is taken as 0-12 years for all practical purposes [3]. Dermatological disorders in children accounted for 9%-37% of visits in different study periods in various studies [4,5]. Paediatric dermatoses will require special attention as there are important differences in clinical presentation, treatment and prognosis vis a vis adult dermatosis[1,7]. The skin conditions affecting neonates and children often have special characteristics which can be transitory or chronic and recurrent [2]. Most of the cutaneous diseases which results from intrinsic genetic abnormalities also have onset in the paediatric age–group [1].

A multitude of factors influence the pattern of cutaneous changes including genetic abnormality, maternal factors, race, nutrition, hygiene, socio-economic status and customs [2]. Also, varied degrees of exposure to external factors associated with multiple stages of functional development of the skin may give rise to different prevalence of dermatoses among infants, toddlers and children. Infants are mostly confined to their household, while preschool children (1-5 years) are exposed to their neighbourhood [6]. There is an increased exposure to various infections and potential irritants [2]. Thus, childhood age may be considered as a surrogate marker for environmental risks [7].

There are numerous skin conditions affecting children. These can be divided into various groups according to different presentations in this age group. Most of the dermatoses seen in neonate, being physiological are transitory in nature and usually resolves on their own with time like vernix caseosa, lanugo, physiological jaundice, erythema toxicum neonatorum, milia, infantile acne, etc. Various pigmentary disorders are also seen like café-au-lait macule, Mongolian spots, nevus, ash leaf macule, etc. They may also suffer with desquamation disorders like ichthyosis, etc. Some may present with vesiculo-pustular disease which may either be non-infectious like erythema toxicum neonatorum, miliaria, etc. or infectious like candidiasis, scabies, impetigo, etc. Neonates may also have skin lesions due to injuries occurring either during prenatal, delivery or post-natal period.

Sexually transmitted diseases (STDs) in children are not uncommon in India, though systematic epidemiological studies to determine the exact prevalence are not available. STDs in children can be acquired via sexual route or, uncommonly, via non-sexual route such as accidental inoculation by a diseased individual [8].

Adverse drug reactions which can manifest as skin eruptions are an important cause for presentation at the OPD with skin lesions in a paediatric population. The safety profile of drugs used in adult patients cannot be extrapolated to paediatric age group [9].

The consequences of skin disease for a population may be difficult to describe because these conditions often do not affect survival. The region of Lucknow in particular has a mixed type of population i.e. Hindus, Muslims and Sikh, living in different socioeconomic conditions, following different type of customs and surrounded by a varied flora/fauna and climatic conditions of different regions. Multiple factors come in to play to cause a number of physiological as well as pathological skin conditions in the paediatric age group. Needless to say an early diagnosis and treatment is necessary to reduce the morbidity and mortality in the paediatric age group [2]. This study aims to decipher the type, pattern of skin diseases in children presenting at the dermatological OPD of our tertiary care hospital and the factors associated with them.

Materials and Method

This prospective observational study was carried out at a tertiary care hospital in Lucknow for 12 months. During the study period, all dermatological referrals in the

paediatric age group, ranging from the newborn period to 12 years of age were included in the study. Any patient above 12 years of age was excluded. Patients who had two skin conditions co-existing together were not included in the study for ease of analysis. A total of 400 patients including both male, and females were studied.

Any history of dermatological illness, family history as well as other co-morbidities or concurrent illnesses were elucidated from all patients (including guardians accompanying them) in an exhaustive manner. This was followed by a comprehensive dermatological, general and systemic examination. Relevant lab investigations were also solicited and the results studied. Data was first noted down in case-sheets and further analysed on the digital platform. The results were analysed using SPPS ver 15.0 software.

Results

Age and sex

The demographic pattern of the children who attended the OPD is as shown in Figure 1. A total of 211 males and 189 females were analysed in the study. The proportion of children in ≥ 8-12 years age group (44.75%) was significantly higher than 0-4 years age group (30.75%) (Chi-Square value = 6.17, p = 0.013, 95% CI = 3.05% to 24.71%) and ≥4-8 years age group (24.75%) (Chi-Square value = 10.82, p = 0.001, 95% CI = 8.27% to 30.44%). There was no significant difference between the proportion of males and females in each age group (p>0.05).

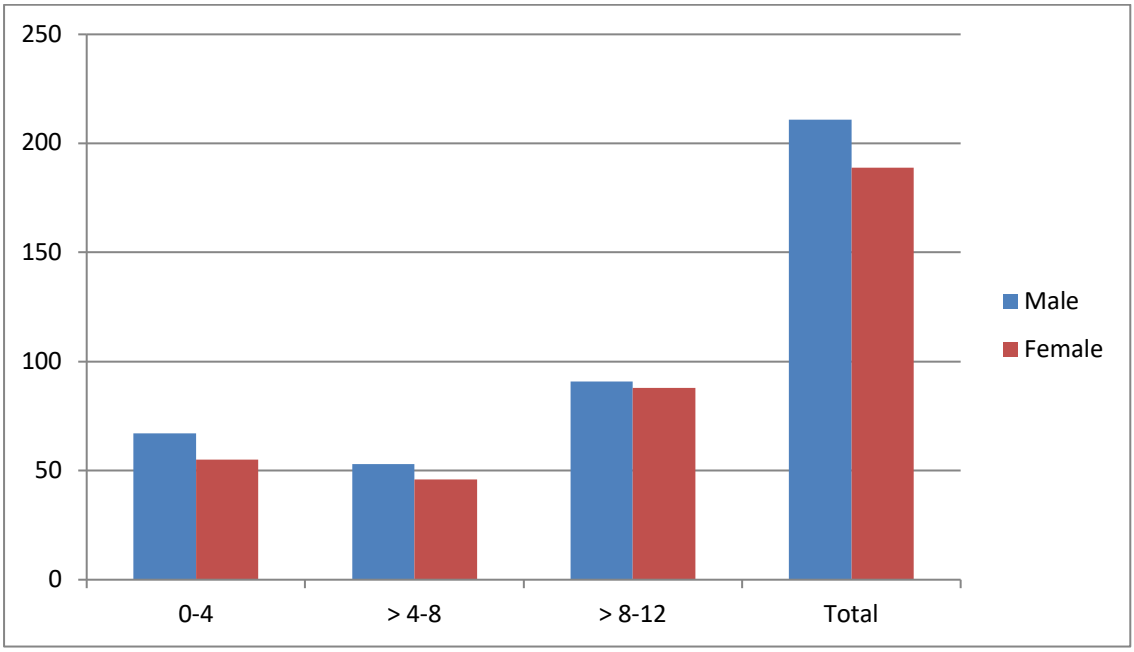


Figure 1: Age and Sex distribution of the Studied Population

Common skin conditions encountered

The proportion of various types of dermatological disorders in children received during the study period is shown in Figure 2. Infestations were the commonest (25%) followed by Papulo-squamous conditions (19.5%), vesiculo-bullous conditions (15%) and infections (14.5%). Eczematous, pigmentary and keratinisation disorders (10.75%, 7.5% and 5%) were relatively lesser in proportion. Infectious skin conditions (Infestations and infections together i.e. 39.5%) formed a major part of the total cases.

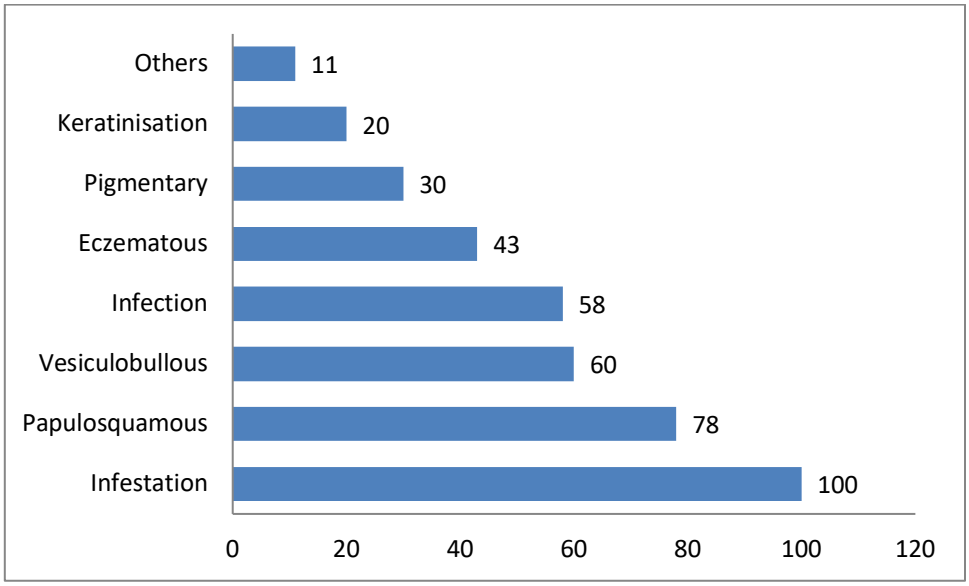
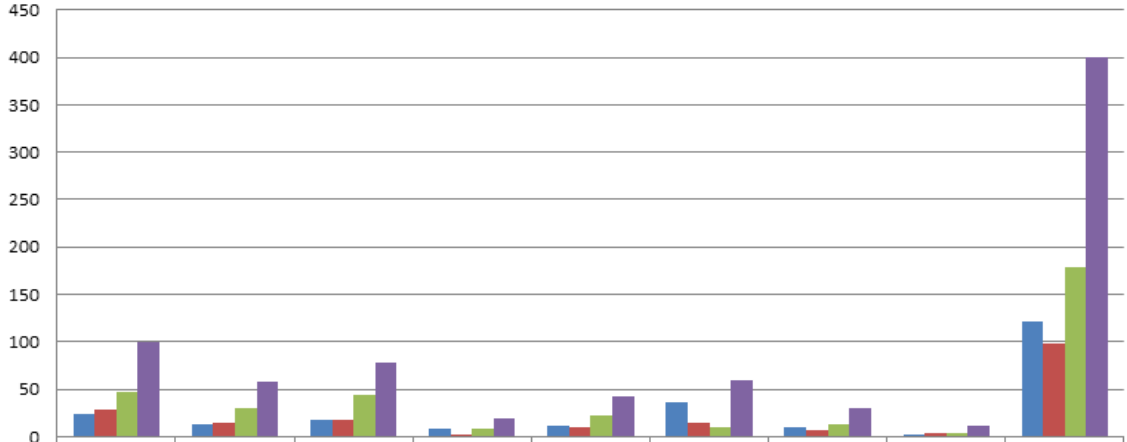


Figure 2: Proportion of various skin disorders observed

Variations between age groups

The specific skin conditions were studied in three age groups, i.e. 0-4 years, 4-8 years and 8-12 years (Figure 3). In the 0-4 years age group, vesiculo-bullous disorders (29.5%) were almost similar in proportion to infectious causes (30.33%). The proportion of vesiculo-bullous conditions fell drastically after 4 years of age, but infectious causes increased (44.44% in 4-8 year age category and 43%in 8-12 year age category). Papulo-squamous disorders were the second commonest disorder in the 8-12 year age group (24.58% and comparable to infections in the category i.e. 26.25%). The gradual rise in presentation with papulo-squamous conditions can be seen in three age groups. The total proportion of skin diseases in the three age groups 0-4 years, 4-8 years and 8-12 years, was 30.5%, 24.75% and 44.75% respectively. Keratinisation disorders formed the least proportion of the total skin disorders presented (5% of the total).



	Infestation	Infection	Papulosquamous	Keratinisation	Eczematous	Vesiculobullous	Pigmentary	Others	Total
0-4 years	24	13	17	8	11	36	10	3	122
> 4-8 years	29	15	17	3	10	14	7	4	99
> 8 – 12 years	47	30	44	9	22	10	13	4	179
Total	100	58	78	20	43	60	30	11	400

Figure 3: Distribution of skin disorders based on age-groups

Variations between the sexes

On comparing between males and females, it was found that there was no significant difference between males and females in relation to the presentations with Infections and infestations i.e. 23.7% for infestations in males against 26.46 in females (Chi-Square value 0.40, p = 0.52, 95% CI = -5.69% to 11.27%) and 15.64% for infections in males against 13.23% in females (Chi-Square value 0.47, p = 0.49, 95% CI = -4.56% to 9.17%). However, there was a significant difference in proportion of papulosquamous diseases between males (13.93%) and females (23.81%) (Chi-Square value 6.58, p = 0.01, 95% CI = 2.31% to 17.53%).

Variations between religions

Out of the 400 cases received at the OPD, 249 were Hindus and 100 were Muslims. The distribution was done to assess any pattern was affected by the customs and traditions followed by different religions. The difference between proportion of infestations in Hindus (22.49%) and Muslims (26.19%) was not significant (Chi-Square value 0.63, p = 0.43, 95% CI = -5.17% to 13.26%). This was observed in infections as well (Hindus 15.64% and Muslims 13.23%) (Chi-Square value 1.91, p = 0.17, 95% CI = -2.47% to 12.09%). The distribution is given in Table 5. The proportion of papulo-squamous disorders also was not significantly different between the two religions (Hindus 22.09% and Muslims 15.87%) (Chi-Square value 2.02, p = 0.15, 95% CI = -2.53% to 13.94%). However, vesiculo-bullous skin conditions were significantly higher in Muslims (20.64%) than Hindus (12.85%) (Chi-Square value 3.87, p = 0.049, 95% CI = 0.035% to 16.46%).

Variations in relation to the family size

Skin ailments were studied with respect to number of persons in the family in three categories, namely, up to 5 members, 6-10 members and more than 10 members (Table 1).

Table 1: Family size-wise distribution of various types of dermatological disorders in children studied

Members —>	Up to 5			6 -10			> 10			Total
Diagnosis	No.	%*	%**	No.	%*	%**	No.	%*	%**	
Infestation	26	26	24.30	66	66	23.83	8	8	50	100
Infection	16	27.59	14.95	41	70.69	14.80	1	1.72	6.25	58
Papulosquamous	22	28.21	20.56	54	69.23	19.49	2	2.56	12.50	78
Keratinisation	6	30.00	5.61	14	70	5.05	0	0.00	0	20
Eczematous	10	23.26	9.34	32	74.42	11.55	1	2.32	6.25	43
Vesiculobullous	15	25	14.02	43	71.67	15.52	2	3.33	12.50	60
Pigmentary	10	33.33	9.35	18	60	6.51	2	66.67	12.50	30
Others	2	18.18	1.87	9	81.82	3.25	0	0.00	0	11
Total	107	26.75	100	277	69.25	100	16	4	100	400

* Proportion reflecting cases in a specific skin disease category over all family sizes

** Proportion reflecting cases among all skin diseases taken together in a specific family category

Maximum patients (69.25%) belonged to the 6-10 members category (277 children) followed by 107 patients from “up to 5 members category” (26.75%). Families with more than 10 members visited the least (4%). Infestations (total 100 visited with 24.3%, 23.83% and 8% proportion were in the mentioned categories respectively), papulo-squamous conditions (total 78 visited with 28.21%, 69.23% and 2.56% proportion in the mentioned categories respectively), vesiculo-bullous conditions (total 60 visited with 33.33%, 60% and 1.72% proportion in the mentioned categories respectively) and Infections (total 58 visited with 27.59%,

70.69% and 1.72% proportion in the mentioned categories respectively) formed the majority of skin ailments, out of which infestations were the highest. Other categories had smaller numbers (< 50 patients). Comparison was done between "up to 5 members group" (107 patients) and "6-10 members group" (277 patients) only since the sample sub-set that visited the clinic for "more than 10 members" was very less (total 16). Infestations accounted for 24.30% of all skin ailments in the "up to 5 members group" and 23.83% of all skin ailments in "6-10 members group" and was comparable (Chi-Square value 0.009, p = 0.92, 95% CI = -8.46% to 10.53%). However, out of the 100 cases of infestations, the "6-10 members group" accounted for 66% cases whereas the other group accounted for 26%. Similarly, there were no significant differences in the proportions of other skin ailments as part of total skin ailments studied in the two groups. However, analysis of individual skin conditions revealed that infections (70.69% vs 27.59%, total 58 cases), papulo-squamous conditions (69.23% vs 28.21%, total 78 cases), keratinisation (70% vs 30%, total 20 cases), eczematous conditions (74.42% vs 23.26%, total 43 cases), vesiculo-bullous conditions (71.67% vs 25%, total 60 cases) and pigmentary conditions (60% vs 33.33%, total 30 cases) were all higher in "6-10 members group" vs "up to 5 members group".

Seasonal patterns

Seasonal trends for diseases encountered were also studied (Table 2). 100 cases per season were included during the study for fair comparison. Infestations, papulosquamous conditions and keratinisation conditions were more common in winters (42%, 30% and 9% respectively). Out of all skin illnesses, infestations were significantly higher in winter (42%) as compared to spring (23%) (Chi-Square value 8.19, p = 0.0042, 95% CI = 6.02% to 31.13%), summer (7%) (Chi-Square value 32.95, p < 0.0001, 95% CI = 23.59% to 45.42%) and rainy season (28%) (Chi-Square value 4.29, p = 0.038, 95% CI = 0.78% to 26.56%). Infections were the second highest among all skin illnesses in rainy season (25%; infestations being 28%). Among all skin illnesses, infections in rainy season were significantly higher than winters (4%) (Chi-Square value 17.69, p < 0.0001, 95% CI = 11.53% to 30.62%) but no significant difference was observed with respect to spring (14%) (Chi-Square value 3.83, p = 0.0502, 95% CI = -0.0357 to 21.79%) and summers (15%) (Chi-Square value 3.109, p = 0.08, 95% CI = -1.14% to 20.91%). Papulo-squamous conditions were the highest among all skin illnesses in the winter season (30%). It was comparable to spring (27%) but significantly higher than summer (13%) (Chi-Square value 8.52, p = 0.0035, 95% CI = 5.62% to 27.92%) and rainy season (8%) (Chi-Square value 15.65, p = 0.0001, 95% CI = 11.29% to 32.34%). Vesiculo-bullous conditions were the highest among all skin illnesses in summer (34%). It was significantly higher than spring (14%) (Chi-Square value 10.91, p = 0.001, 95% CI = 8.20% to 31.16%). It was also significantly higher than rainy season (11%) and winter season (1%). Eczematous conditions were represented almost equally in spring, summer and rainy season (13%, 14% and 11% respectively). Eczematous, keratinisation and pigmentary ailments had lesser sample subset and distributed in a manner which were not reliable to study any major differences so they were not compared statistically.

Table 2: Season-wise distribution of various types of dermatological disorders in children studied

Diagnosis	Winter		Spring		Summer		Rainy		Total
	No.	%	No.	%	No.	%	No.	%	
Infestation	42	42	23	23	7	7	28	28	100
Infection	4	4	14	14	15	15	25	25	58

Papulosquamous	30	30	27	27	13	13	8	8	78
Keratinisation	9	9	6	6	2	2	3	3	20
Eczematous	5	5	13	13	14	14	11	11	43
Vesiculobullous	1	1	11	11	34	34	14	14	60
Pigmentary	9	9	1	1	11	11	9	9	30
Others	0	0	5	5	4	4	2	2	11
Total	100	100	100	100	100	100	100	100	400

Scabies leads the list

Among infestations, the commonest was scabies (83%) followed by pediculosis capitis (17%). Scabies was also the commonest skin condition (20.75%) among the top 10 skin conditions encountered (Table 3) followed by miliaria (10.25%), psoriasis (7.75%) and fungal infections (6.5%). Though the number of scabies cases received in 5-10 years age group was higher than other groups but proportions were not significantly different from each other ($p>0.05$ for all comparisons). Psoriasis (39.74%) was the commonest papulo-squamous ailment followed by Seborrheic dermatitis (17%). In the vesiculo-bullous group of disorders, miliaria (68.33%) was the commonest followed by impetigo (18.33%). Among infections, the majority of children suffered from fungal infections (44.82%) followed by molluscum contagiosum (20.68%).Among the eczematous group of disorders, the majority of patients suffered from papular urticaria (51.16%) followed by contact dermatitis (32.55%). Vitiligo (60.0%), irrespective of the site, was the commonest pigmentary disorder followed by nevus (23.33%). Amongst the keratinisation group of disorder, Ichthyosis (55.0%) was the commonest

.**Table 3: Top 10 common skin disorders observed in the sample studied**

S No	Disease	Number	Percentage
1	Scabies	83	20.75
2	Miliaria	41	10.25
3	Psoriasis	31	7.75
4	Fungal infection	26	6.5
5	Papulourticaria	22	5.5
6	Vitiligo	18	4.5
7	Pediculosis capitis	17	4.25
8	Bacterial Infection	17	4.25
9	Seborrheic dermatitis	17	4.25
10	Contact dermatitis	14	3.50

Discussion

On reviewing the literature, many studies have been reported regarding the prevalence of paediatric dermatoses in the Indian subcontinent. Negligible studies have been conducted in the region of Uttar Pradesh, which is a very highly populated state; hence the present study underlies the importance of studying the prevalence of skin diseases in the paediatric age group in this region.

Sex and age

In this study, the proportion of males (52.75%) was more than females (47.25%). Many studies have noted a male preponderance among reported cases of skin diseases. Median V *et al*. (2018) found 59.39% males against 40.60% females whereas Reddy BR and Rao TVN (2019) noted a male preponderance of 52.5% against 47.5% females.

Similar findings were found in other studies in India by Dos Santos MM *et al.* (2010), Sardana *et al.* (2009) and

Kartikeyan K *et al.* (2004); whereas studies conducted outside India viz. Tamer E (2008), Wenk C *et al.* (2003) showed a slight female majority [5,6,10,11]. In our study, though there was no significant difference in the proportion between males and females, still the slight predilection of males being in majority may reflect the fact that Indian families are more concerned about the male child disease as compared to the female child.

According to this study, the maximum number of cases belonged to the age group ≥8-12 years (44.75%). This is comparable to a study conducted by Gunjana G and Upadhyay N at a hospital in Gandhinagar, Gujarat in 2016 wherein the majority of dermatoses (39.4%) belonged to the age group of 6 -16 years among 400 children who attended the skin OPD 30. A study by Thummanapally N *et al*. (2020) in Warangal showed a proportion of 61% in children of the age group 5 - 17 years [12]. A study by Jawade SA in 2009 - 2010 showed that children of the age group 1 - 6 years were maximum affected by skin diseases (46.32%) followed by 7 - 14 years age group (33%). There is no clear evidence of the predilection of one group (school going children) over the other (children not going to school) if various studies are compared [13]. However, in our study, the higher proportion of skin diseases in ≥8-12 age group may reflect that going to school exposes them to external environmental conditions like school bus and the school campus per se, with students from various households, wherein, contracting of infectious dermatoses can be more common. Our study shows a skin disease prevalence of 69.5%in 4-12 years age group, which is higher than that found by Anand IS (1998) in Jamnagar (43.5% in 5-12 years group) and Saval SK *et al.* (1998) in Pune (41.3% in 5-12 years); but is comparable to Wenk C *et al.* (2003) in Switzerland (60% in 4-12 years age group) and Giam YC (1988) in Asia (64.5% in 5-14 years age group) [14-17]. This predilection may suggest that school going children are more likely to present with skin diseases.

Common skin conditions encountered

Infestations were the commonest skin ailment in our study (25%). Infestations and infections combined (infectious group of disorders) had a proportion of 39.5% (infections 14.5%) in our study. Saurabh S *et al*. (2013) found that among 211 cases of primary school children in a rural area in Puducherry (5 - 10 years age group), 24.21% suffered from infestations [18]. Infestations were also the commonest ailment in a study carried out by Reddy BR and Rao TVN (38.6% for infestations and 57.7% for both infestations and infections combined) [11]. Infectious dermatoses (infestations and infections) being the commonest pattern in most studies including ours can be attributed to the poor hygiene level prevailing in the society. Late reporting due to application of home remedies and avoidance of visiting the hospital caused rapid spread of infestations/infections resulting in the higher proportion seen in OPDs.

Religion

In this study, the majority of patients who attended the skin OPD were Hindus (62.2%). This is due to the fact that Hindus are a majority religion. However, the difference between the proportion of individual skin diseases between Hindus and Muslims were not significant, except vesiculo-bullous disorders, which was significantly high in Muslims.

Family size

Majority of skin diseases are present in medium size family with the number of family members 6-10 (69.25%).

Infestation group of disorder was maximum in medium size family with number of members 5-10 (66%). This is supported by study conducted by Landwehr D *et al.* (1998) who showed overcrowding is a risk factor for infestations and infections [19]. The proportion of skin diseases in families

having more than 10 members was low (and not reliable) due to the fact that such families are proportionately less in the general population and presented in small number to the OPD.

Seasonal variation

Seasonal variation is seen in maximum number of skin diseases. Overcrowding, close contact and poor hygiene are the most important predisposing conditions responsible for infestation, which explains the high prevalence of infestation during winters (42%) in our study. This is supported by studies conducted by Balai M *et al.* (2012) in Rajasthan, Banerjee S (2010) in Kolkata and Karim SA *et al.* in Dhaka (2007) [11,20,21]. Further, the prevalence of scabies (65.25%) and pediculosis capitis (58.81%) were also found to be maximum in winter and spring season, which is also shown by Heukelbach J *et al.* in Brazil.

High temperature and humidity of summer and rainy season favours rapid proliferation of bacteria and dermatophytes leading to higher prevalence of skin infections in this season [22]. This explains the high prevalence of infections during summer (15%) and rainy season (25%) in this study. This is also shown in studies by Balai M *et al.* in Rajasthan [20]. Prevalence of fungal infections is highest during rainy season (53.84%) in this area, due to favourable growth of dermatophytes in this season.

Low temperature and low humidity in winter are among the many of the presumed aggravating factors for papulo-squamous disorders especially psoriasis and seborrheic dermatitis. It accounts for their high preponderance during winters (30%). Prevalence of psoriasis (51.83%), lichen planus (50%) and seborrheic dermatitis (42.85%), when taken singly is high during winters in this study. Similar findings were also found in studies by Balai M *et al.* in Rajasthan, Sandipar Dhar *et al.* in north India, Banerjee S in Kolkata and Stefanaki C *et al.* in Greece [20-25].

High temperature during summer and high humidity during rainy season promote the blockage of sweat ducts, which predispose a child to develop miliaria. The incidence of impetigo is greatest during summer when there is common close contact between children. This is shown by high prevalence of miliaria during summer (70.73%) and rainy (26.82%) seasons as well as impetigo during summer season (48.15%) in this study. This is supported by studies conducted by Balai M *et al.* in Rajasthan, Banerjee S in Kolkata [7,20].

The seasonal variation of papular urticaria may be attributed to the seasonal influence on biting habits of the insects in the locality. Rainy season is a favourable time for the breeding of insects. This is shown in our study by higher incidence of papular urticaria during rainy season (45.45%). This is in accordance with studies by Balai M *et al.* in Rajasthan, Banerjee S in Kolkata and Tamur E in Turkey [7,20-27].

Infectious conditions

Among the infection group of disorders, maximum cases are of fungal infection (44.82%) which rank fourth (6.50%) in top 10 diseases. Primary bacterial infection cases are about (10.34%) among infections. Balai M *et al.* in Rajasthan, Sardana *et al.* in New Delhi, Kartikeyan K *et al.* in Pondicherry and Anand IS in Jamnagar in their studies found bacterial infections to be the most common among infections i.e. 13.72%, 13.4%, 29.81%, 58.09%, 47.13% and 33.93% respectively [5,6,14,20]. The lower prevalence of bacterial infections, among the children attending skin outpatient department in our study can be due to the fact that most bacterial infections are by convention treated by the medical officer or paediatrician, rather than directly reaching the dermatologist. It was found out that medical officers and paediatricians frequently treated conditions like boils, acne, etc in this hospital at their own level; they mostly referred fungal infections to the skin OPD. However, a study by Dos Santos MM *et al.* (2010) in Timor Leste

also found fungal infections to be the most common among infections (39%) [28].

In this study, children between 8-12 years (57.69%) and males (57.70%) are affected more with fungal infection, which is also shown by Zarrin M *et al.* (2011) in children of Iran where tinea infection were more frequent in males (61.5%), and between 6 and 10 years of age [29]. This is due to the possibility that large outbreaks are more likely to happen in schools or other places where children are congregated. It is also generally a childhood disease and rare after puberty due to an increase in saturated lipid acids after puberty, which are fungicidal and fungistatic.

Papulo-squamous conditions

Among papulo-squamous disorders, psoriasis forms the major bulk of disease burden (39.74%) in our study. Prevalence of psoriasis is found high in ≥8-12 years age group (67.74%) and among females (74.20%). Stefanaki C *et al.* (2010) in Greece also found a high prevalence of psoriasis in 9-10 years age in females (female: male was 1.4:1) [25]. In our study, psoriasis formed 7.75% of all skin disorders. In a study by Kartikeyan K *et al.* in South India, psoriasis accounted for 1.4% of all dermatoses [5]. Sandipan Dhar *et al.* in North India observed that the prevalence of psoriasis was 12.5% with age of onset ranging from 4 days to 14 years with equal male and female prevalence [24]. The frequency of psoriasis flare ups are multi-factorial and can also depend on the region/state of residence, the weather, infections, genetic predilection, skin care, etc.

Seborrheic dermatitis (21.79%) in this study had a peak prevalence in children <4 years (41.17%) and males (64.70%). The prevalence of seborrhea dermatitis decreased steadily with increasing age. This is consistent with the study by Banerjee S (2010) [7]. This seems to be consistent with the fact that sebaceous secretion rates are high in neonates due to placental transfer of maternal androgens and subsequently, sebaceous gland activity decreases from the end of the first month.

Keratinisation disorders

Among the keratinization disorder, Ichthyosis (55%) and palmo-plantar keratoderma (25%) were found to be the most common diseases in this study. A high prevalence of Ichthyosis due to probable high incidence of consanguineous marriage in certain sects has been shown by Balai M *et al.* and Kartikeyan K *et al.* in their studies [5,20].

Eczematous conditions

Among the eczematous disorders, prevalence of papular urticaria forms a major bulk of disease burden (51.16% among 43 cases, 5.5% among 400 cases). This may be due to increased exposure to insect bites in the tropical region. Papular urticaria is present more in males (63.63%) of age group 8-12 years (45.45%), pointing to their more outdoor activities as compared to females and children of other age group. Kartikeyan K *et al.* in Pondicherry and Sardana *et al.* in New Delhi found incidence of papular urticaria to be 5.27% and 3.59% which is comparable to this study [5,6]. Prevalence of atopic dermatitis (9.30%) in this study was quite low as compared to other studies by Balai M *et al.* [20,23].

Vesiculobullous conditions

Among vesiculo-bullous disorders, miliaria (68.33%) and impetigo (18.33%) form the major bulk of diseases in this study. This can again be attributed to the tropical conditions in this region. Prevalence of miliaria is high in male (65.85%) and in children less than 4 years of age (65.85%). This may be due to increased incidence of oil massage in Indian scenario, blocking sweat ducts. Diminution of prevalence of miliaria as the toddlers reach the pre-school-child age group (19.51%) may be due to development of some degree of tolerance to the environmental factors, the so called 'hardening' of the skin.

Pigmentary disorders

Vitiligo forms a major burden among the pigmentary group of disorders (60%) followed by nevi (23.33%). Vitiligo was present more in 8-12 years old children (55.55%) with no major sex predilection. Balai M *et al.* showed 28.57% prevalence of vitiligo in Rajasthan which is lower than this study [20,31].

Conclusion

Infectious skin diseases were the commonest paediatric dermatoses which presented to the skin OPD of our tertiary care hospital. This calls for comprehensive health education and intervention to enhance the knowledge and practice of hygiene amongst children and their parents. This will reduce the burden and subsequent complications considerably. Dermatological conditions are multi-factorial and it is necessary for health care workers as well as the community to be aware of the associated factors like age, seasonal effects, hygiene, overcrowding, etc. This study has only discussed the distribution and proportion of the skin diseases in children that attended the OPD of our tertiary care hospital. There have been many community based studies but the current study had been designed to be a hospital based study to gain insight into the distribution and proportion of skin illnesses among the paediatric age group. This study only gives a glimpse of the various factors associated in causing paediatric dermatoses. It does not establish any firm association of factors with illnesses. Many more studies of different design with a larger sample size will help in giving a better picture of the incidence, prevalence and various factors associated with paediatric dermatoses.

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