

Prevalence and Patterns of Genital Dermatoses in Children

Dr. V. Nivedita Devi¹, Dr. Balachandrudu², Dr. P. Rajasekhar³

¹Associate Professor, DVL, Rangaraya Medical College, Kakinada

²Professor and HOD, Rangaraya Medical College, Kakinada

³M.D.Postgraduate, Rangaraya Medical College, Kakinada

Running Title: Prevalence & Patterns of Genital dermatoses in children.

Abstract: Introduction: External environment, dietary habits and socioeconomic status influence paediatric skin diseases. A prospective study was conducted from December 2011 to July 2013 to evaluate the prevalence and patterns of genital dermatoses in children attending D.V.L. & Paediatric OPDs, Government General Hospital, Kakinada. Materials and Methods: After informed consent, 200 children of 1-18 years with genital dermatoses confirmed by relevant bed side laboratory investigations were enrolled in the present study. They were grouped based on age as toddlers (1-3years), preschool (3-6 years), school going (6-10 years) and adolescents (9-18 years). Results: Out of 200 children, 132 males and 68 females, 25.9% was school going. Out of 173 children having infective dermatoses, 80.35% were hostel residents, mostly from rural area belonging to low (42.2%) and middle (57.8%) socio-economic status. The most common infective dermatoses in preschool children was bullous impetigo (8.12%) and in adolescents genital scabies (21.46%), tinea cruris (5.22%) and molluscum contagiosum (2.5%). Out of 27 children with noninfective dermatoses, 74.07% belong to low socio-economic status. Nutritional deficiency and phrynoderma was in 5% and genital vitiligo in 3%. Traumatic ulcer, Fordyce spots, burns, lichen planus, lichen striatus, hemangiomas and phimosis were the other non-infective dermatoses found. Conclusion: Communicable diseases like scabies, bacterial infections, fungal infections and nutritional deficiencies are more prevalent in school going children reflecting the status of health, poverty, lack of personal cleanliness and nonavailability of soaps and antifungals. Our study suggests the need for health education, better nutrition and protection from child sex abuse in schools and hostels.

Keywords: Genital dermatoses, children, infective, non infective

1. Aims and Objectives

1.1 Aim

To study the prevalence and patterns of genital dermatoses in children 1-18 yrs age group.

1.2 Objectives

- 1) To study the prevalence and patterns of genital dermatoses.
- 2) To study the Clinico-epidemiological factors of genital dermatoses.
- 3) To study the impact of cosmetics, wearing tight under garments, sexual abuse of children in the society on genital dermatoses.

2. Materials and Methods

Study Design: A hospital based, Cross Sectional Study approved by Ethics committee of Rangaraya Medical College, Kakinada. An informed consent is taken.

Study Subjects: Children attending DVL & Pediatric OPD of Government General Hospital attached to Rangaraya Medical College, Kakinada with a clinical diagnosis of genital dermatoses from November 2011- July 2013.

Methodology: A detailed epidemiological data is taken which includes name, age, sex, socio economic status,

detailed history, general examination, details of cutaneous lesions, provisional diagnosis.

Inclusion Criteria: 200 Children of either sex between 1 to 18 years of age attending DVL and Pediatric OPD with a clinical diagnosis of genital dermatoses.

Exclusion Criteria: Patients not willing to participate and guardian not willing to allow their children for the study. Those cases which are repeated are also excluded.

Socio-Economic Status (SES): In the present study SES was classified as low (poor), medium (middle class) and high (rich) grades according to the standard of living index (SAL) used in the National Family Health Survey (NFHS-2).

Data Analysis: Data is represented in the form of tables, bar diagrams & pie diagrams. Data was analyzed by applying chi-square as test of significance. Data analysis was done by SPSS.

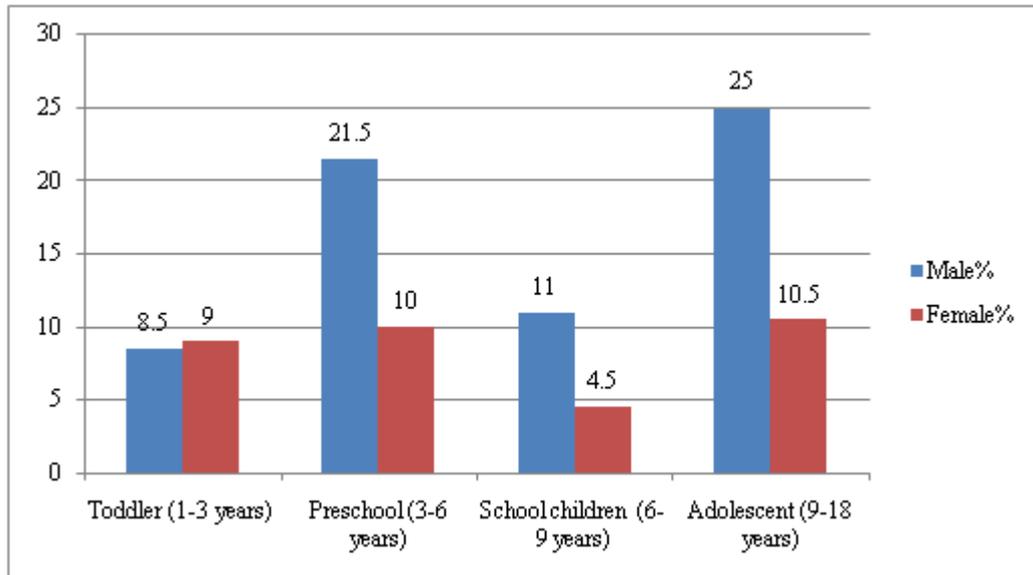
3. Results

Out of 200 children, 132 males and 68 females, 25.9% were school going. Out of 173 children having infective dermatoses, 80.35% were hostel residents, mostly from rural area belonging to low (42.2%) and middle (57.8%) socio-economic status. The most common infective dermatoses in preschool children was bullous impetigo (8.12%) and in adolescents genital scabies (21.46%), tinea cruris (5.22%) and molluscum contagiosum(2.5%).

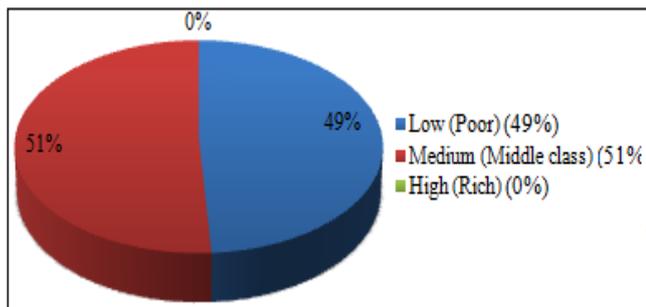
Out of 27 children with noninfective dermatoses, 74.07% belong to low socio-economic status. Nutritional deficiency and phrynoderma was in 5% and genital vitiligo in 3%. Traumatic ulcer, Fordyce spots, burns, lichen planus, lichen

striatus, hemangiomas and phimosis were the other non-infective dermatoses found.

Age & Sex Distribution



In all the age groups, there is predominant involvement of male children with the exception of toddlers. Socio economic status: According to the standard of living index (SAL) used in the National Family Health Survey (NFHS-2).

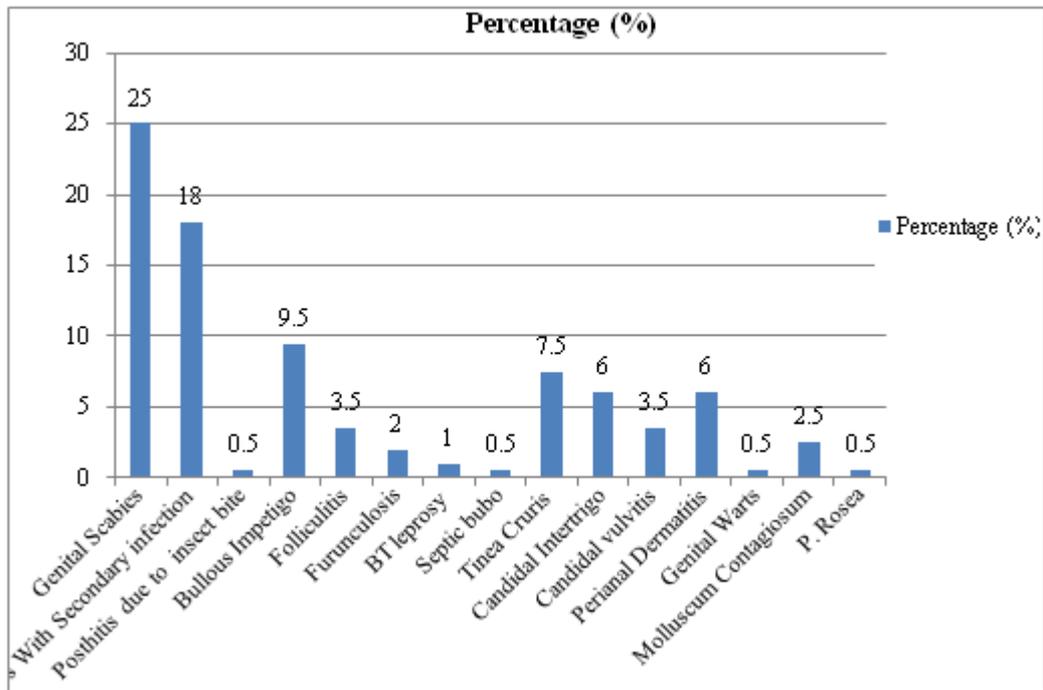


In the present study, the majority of children belong to the middle socioeconomic group (51%) and low socioeconomic group (49%).

In the present study, majority of genital dermatoses were seen in children from Rural community (64.5%).

Table 1: Infective Dermatoses

	No. of Cases (N)	Percentage (%)
Parasitic Infestations		
Genital Scabies	50	25.0
Scabies With Secondary infection	36	18.0
Posthitis due to insect bite	1	0.5
Bacterial Infections		
Bullous Impetigo	19	9.5
Folliculitis	7	3.5
Furunculosis	4	2.0
BT Hansen's	2	1.0
Septic bubo	1	0.5
Fungal Infections		
Tinea Cruris	15	7.5
Candidal Intertrigo	12	6.0
Candidal vulvitis	7	3.5
Perianal Dermatitis	12	6.0
Viral infections		
Genital Warts	1	0.5
Molluscum Contagiosum	5	2.5
P. Rosea	1	0.5
Total	173	86.5



Infective Genital dermatoses were seen in 173 (86.5%) of the total cases.

Parasitic Infestations: Genital scabies was found to be the most common dermatoses among all the other types (43%). Scabies with secondary infection constituted 18%.

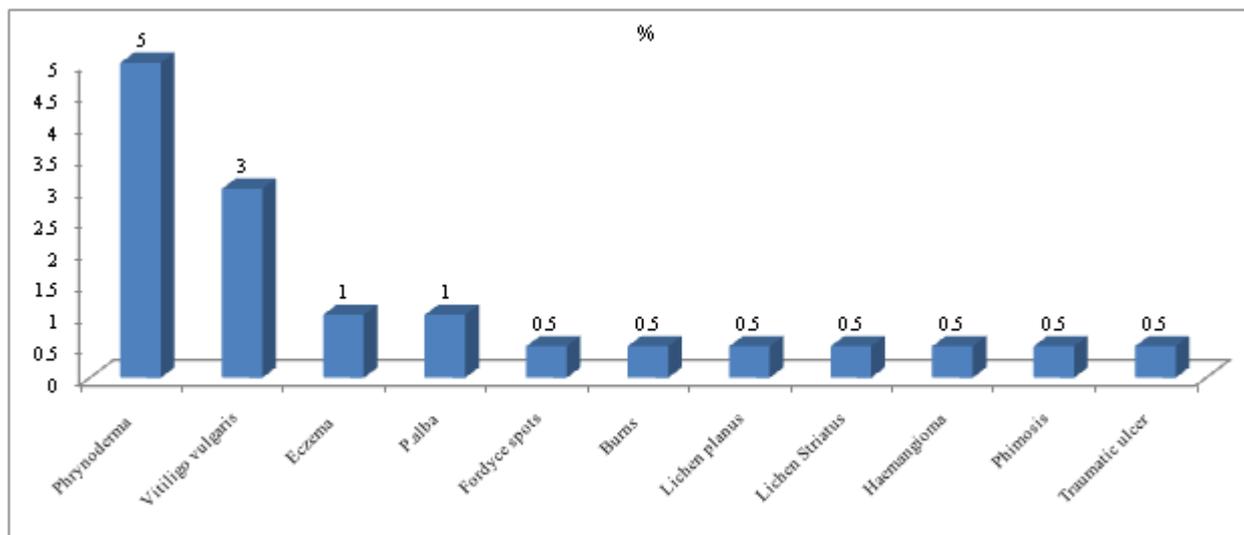
Bacterial Infections: Bullous impetigo was the predominant bacterial infection (9.5%) followed by Folliculitis (3.5%), Furunculosis (2%), BT Hansen's (1.0%) and Septic bubo (0.5%).

Fungal Infections: Tinea cruris was found to be the most common fungal infection (7.5%) followed by candidal intertrigo (6.0%). Perianal dermatitis and candidal vulvitis were seen in 6.0% and 3.5% respectively.

Viral Infections: Among viral infections Molluscum contagiosum was more frequently found (2.5%) than viral warts (0.5%) and pityriasis rosea (0.5%).

Table 2: Non Infective Genital Dermatoses

Non Infective dermatoses (n=200)	No. of cases (n)	Percentage (%)
Phrynoderma	10	5
Vitiligo vulgaris	6	3
Eczema	2	1
P.alba	2	1
Fordyce spots	1	0.5
Burns	1	0.5
Lichen planus	1	0.5
Lichen Striatus	1	0.5
Haemangioma	1	0.5
Phimosis	1	0.5
Traumatic ulcer	1	0.5
Total	27	13.5



Non Infective dermatoses were seen in 13.5% (27) of total cases. Phrynoderma (5%) was the most common followed by vitiligo vulgaris (3.0%), eczema (1.0%), P.alba (1.0%), Fordyce spots (0.5%) lichen planus (0.5%), lichen striatus (0.5%), haemangioma (0.5%), phimosis (0.5%) and traumatic ulcer (0.5%) respectively.

Infective dermatoses and Age:The most common infective genital dermatoses was genital scabies (11.04%) & scabies with secondary infection (10.44%) in the age group of 9-18 years, bullous impetigo (8.12%) in preschool children and tinea cruris (5.22%) in adolescent age group.

Infective Dermatoses and Sex: Genital scabies (24.86%) and scabies with secondary infection (15.03%) were most common in male children, whereas scabies with secondary infection (5.78%), bullous impetigo (5.20%) & candidal intertrigo(5.20%) were predominant in female children.

Infective Dermatoses and Socio-economic Status: In children of low socio-economic class, genital scabies(16.18%) and tinea cruris (5.78%) were most common. Genital scabies (33.52%) was most common in middle socio-economic class children.

Infective Genital Dermatoses and Place of Residence: In rural children, genital scabies (30.06%) & bullous impetigo (7.51%) were most frequently found whereas genital scabies (8.09%) was the most common dermatoses in Semi urban children. **Infective Dermatoses and Under Garments.** Out of 173 children with infective dermatoses, 97% were wearing under garments and 2.89% were not using under garments.

Table 3: Infective Dermatoses and Residents of Hostel

Genital dermatoses	HOSTEL					
	Resident	%	Non-resident	%	Total	%
Parasitic infestation						
Genital Scabies	15	8.67	35	20.23	50	28.90
Scabies With Secondary infection	12	6.94	24	13.87	36	20.81
Posthitis due to insect bite	0	0.00	1	0.58	1	0.58
Bacterial Infections						
Bullous Impetigo	0	0.00	19	10.98	19	10.98
Folliculitis	0	0.00	7	4.05	7	4.05
Furunculosis	0	0.00	4	2.31	4	2.31
BT Hansen's	0	0.00	2	1.16	2	1.16
Septic bubo	0	0.00	1	0.58	1	0.58
Fungal infections						
Tinea Cruris	4	2.31	11	6.36	15	8.67
Candidal Intertrigo	1	0.58	11	6.36	12	6.94
Candidal vulvitis	1	0.58	6	3.47	7	4.05
Perianal Dermatitis	1	0.58	11	6.36	12	6.94
Viral infections						
Molluscum Contagiosum	0	0.00	5	2.89	5	2.89
Genital Warts	0	0.00	1	0.58	1	0.58
P. Rosea	0	0.00	0	0.58	1	0.58
Total	34	19.65	139	80.35	173	100.00

Infective dermatoses were found in 98% of hostel residents, whereas it was 83.33% in non-residents.

Non Infective Dermatoses and Age: In our study, genital vitiligo was the most common non infective dermatoses(7.41%) in all age groups with the exception of phrynoderma (18.50%) in 6-9 year age group.

Non Infective Dermatoses and Sex: Phrynoderma(25.93%) and Pityriasis alba (7.41%) were the most common non-infective dermatoses in male children.

In female children, phrynoderma(11.11%) and vitiligo(18.52%) were most commonly seen.

Non Infective Dermatoses and Socio-Economic Status: Phrynoderma (29.63%) & Vitiligo (14.81%) were most common non-infective dermatoses in low socio-economic class children whereas phrynoderma & vitiligo were more common(7.41%)in middle socio-economic class.

Non Infective Dermatoses and Place of Residence: Phrynoderma(29.63%) & vitiligo(14.81%) were most common non-infective dermatoses in rural children. Phrynoderma & vitiligo were 7.41% in semi urban children.

Non Infective Dermatoses and Under Garments: Out of 27 children with non-infective dermatoses, 88.89% were wearing under garments and 11.11% were not using under garments.

Non Infective genital dermatoses and residents of hostel: All children with non-infective dermatoses were non-residents of hostel.

4. Discussion

Skin of the children is more prone to develop skin diseases.¹ The prevalence of certain skin diseases in children can reflect status of health, hygiene, and personal cleanliness.² The pattern of skin diseases in children is very much influenced by climate, external environment, dietary habits and socio economic status.³ Communicable diseases like parasitic infestations, bacterial and fungal infections are more prevalent in the school going age group⁷Hot and humid climates, low level of hygiene are classical predisposing factors to the development of pyoderma.⁸ The pattern of skin diseases varies from one country to another and even from one region to another within the same country²² which is attributed to differing climatic, cultural and socio-economic factors. In our study, out of 200 children, infective dermatoses are seen in 173(86.5%) children, while non-infective and nutritional deficiency dermatoses are 13(8.5%) & 10(5%) respectively .

Karthikeyan K et al⁷ found infection & infestation(54.5%) in his study. K.S. Negi et al, in his institutionalized study, out of 1754 children, infectious dermatoses were found in 1250(50.9%), while non-infective & nutritional deficiency dermatoses were seen in 775(31.6%) & 430(17.5%) respectively.¹² The warm and humid environment in and around sea coast and sandy soil of Kakinada may be a place for infective organisms to flourish and this may be the cause for increased percentage of infective dermatoses in our study. Parasitic infestations like scabies are more prevalent in more populous country like India, and due to overcrowding, poor hygiene, susceptibility & easy

transmissibility, there is increased chances of transmission to other children. In the present study, out of 200 cases, scabies (43%) was found to be the most common dermatoses among all the other infective dermatoses. Genital scabies was seen in 25% and scabies with secondary infections in 18%.of cases. The predominant age group where scabies was seen is adolescents (21.46%). It was seen less among toddlers (3.48%). This might be due to increased exposure with other children suffering from scabies infestation in adolescents. Scabies was seen in 43% of the total cases (200), of which majority of the cases were seen in male children (39.89%) compared to female (9.83%). Secondary infections in scabies are also higher among boys (15.03%) than girls (5.78%). Among the infective dermatoses, scabies is seen more children in families with middle socioeconomic class children (33.52%). 16.18% of them belong to low socioeconomic class children. Majority of children with genital scabies are from the rural community (30.06%). This is due to poor hygiene, increased susceptibility and increased prevalence of scabies in rural community.34.10% of the children with genital scabies are non residents of hostel and 15.61% are residents of hostel.In the present study, out of 200 children, bacterial infections are 16.5%, bullous impetigo is 9.5% followed by folliculitis (3.5%), furunculosis (2%) respectively. K.S. Negi et al¹² in his study found that pyoderma (15.4%) which is correlating with our study. Sardana K et al²² found bacterial infections 27.39% in his study. Gosh SK et al⁶ found that pyoderma, was the most common skin disease (35.6%), which differ from the present study. This is because the pattern of skin diseases varies from region to region which is attributed to differing climatic, cultural and socio-economic factors.¹⁷In the present study, bacterial infections are common among preschool children (12.76%), Majority of the bacterial genital infections are found in male children (12.18%) compared to female children (6.96%).Bacterial infections are more common among children of low socioeconomic class (10.41%) than middle socioeconomic class (9.26%) Most common bacterial infection found was bullous impetigo (7.51%) and folliculitis (2.89%) in children from rural and semi urban children respectively.

Fungal infections: In fungal infections, tinea cruris was found to be the most common (7.5%) followed by candidal intertrigo and perianal dermatitis (6.0%). Sardana K et al²² found 4.65% of fungal infections in his study which is correlating with our study. Majority of fungal infections were seen in the toddlers age group(9.86%) with the exception of tinea cruris which was found mostly in adolescent age group (5.22%).Fungal infections were found more(17.4%)in female children than in male (9.28%).Fungal infections were found in 15.08% of children belonging to low socioeconomic class and 11.6% of middle socioeconomic class.18.56% of children showing fungal infections are from rural community compared to 6.37% in semi urban children.

Viral infections: Among viral infections, Molluscum contagiosum was more frequently found (2.5%) than viral warts (0.5%) and pityriasis rosea (0.5%). In Gosh SK et al⁶ study Molluscum contagiosum was found in 4.6% of the children which is correlating with our study. In the present study, majority of viral infections in were seen in toddlers

(1.74%) and all were male. Sardana K et al²² found viral infections in 3.68% which is correlating with our study (3.5%).The middle socio-economic class children constituted 3.47% of viral infections. Most of the children with viral infections are from rural community (3.47%).

Non Infective dermatoses: Non Infective dermatoses were seen in 27 (13.5%) of the total cases. Phrynoderma was the most common (5%) genital dermatoses followed by genital vitiligo(3.0%), eczema & pityriasis alba (1.0%), burns (0.5%), lichen planus (0.5%), lichen striatus (0.5%), haemangioma (0.5%), phimosis (0.5%) and traumatic ulcer (0.5%) respectively. Sardana K et al²² found pityriasis alba 5.85% in his study which is 1% in our study. Karthikeyan K et al⁷ found in his study nutritional deficiency-associated dermatoses was 2.8%.K.S. Negi et al¹² in his study found that pityriasis alba (10.4%) and eczema (8.1%) which is not correlating with our study. Out of 27 children with non-infective dermatoses, 29.60% belongs to adolescent and preschool children & 25.90% belongs to school age children. Male children had more noninfective dermatoses (55.56%) than female children (44.44%) in the present study. Majority of the non infective dermatoses were seen in low socio-economic class children (74.07%) than middle socio-economic class (25.93%).Most of the children with noninfective dermatoses were from rural community (74.07%) and 25.93% in semi urban children .

5. Conclusion

From this study we conclude that communicable like scabies, bacterial infections, fungal infections and nutritional deficiencies were more prevalent in school going children reflecting the state of health, poverty lack of personal cleanliness and non availability of soaps and antifungals. Our study suggests the need for health education, better nutrition and protection from child sex abuse in schools and hostels.

6. Abbreviations

SES- Socio Economic Status
SAL-Standard of living index
NFHS-2-National Family Health Survey
SV- Segmental vitiligo
NSV-Non segmental vitiligo

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