



RESEARCH ARTICLE

A STUDY ON THE CLINICAL SPECTRUM AND EPIDEMIOLOGICAL PROFILE OF PEDIATRIC DERMATOSES IN A TERTIARY CARE HOSPITAL

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Abstract

Introduction: The pediatric dermatoses include a wide variety of infections, inflammatory, allergic, parasitic, pigmentary, papulosquamous, congenital, and many other skin diseases that occur during the period of early childhood up to the end of puberty. The incidence and clinical presentation of these diseases are determined by age, sex, climatic conditions, socioeconomic status, levels of hygiene, living conditions, nutrition, and access to health care. These skin diseases can cause significant morbidity in children due to itching, pain, discomfort, sleep disturbance, limited school attendance, and psychosocial effects. Therefore, a comprehensive understanding of the clinical and epidemiological pattern of pediatric dermatoses is critical for an appropriate diagnosis, treatment, prevention, and healthcare planning.

Method: A hospital-based observational cross-sectional study was conducted among 140 pediatric patients below 16 years diagnosed with dermatoses and attending the Dermatology OPD during 2019–2020. Demographic and clinical details were collected using a structured proforma after informed consent. Patients were selected according to predefined inclusion and exclusion criteria and clinically evaluated.

Result: The study included 140 pediatric patients, with infection and infestations being the most common dermatoses (85, 60.71%), followed by eczematous diseases (50, 35.71%). Papulosquamous and hypersensitivity diseases each occurred in 12 patients (8.57%). Among 20 bacterial infections, impetigo was predominant (10, 50%), while among 15 viral infections, verruca was most frequent (7, 46.67%). Among 50 eczematous cases, pityriasis alba was predominant (14, 28%), with the highest eczema frequency in children aged 1–5 years (15, 30%).

Conclusion: The study concluded that the infectious and eczematous dermatoses were predominant, along with the pediatric dermatological conditions were impetigo, verruca, and pityriasis alba.

Keywords: Pediatric Dermatoses; Clinical Spectrum; Epidemiological Profile; Infections and Infestations; Eczematous Disorders; Impetigo; Verruca; Pityriasis Alba; Tertiary Care Hospital; Pediatric Dermatology

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1 | INTRODUCTION

Pediatric dermatoses are a heterogeneous group of infections, inflammatory, allergic, parasitic, pigmentary, papulosquamous, congenital, genetic, and other disorders occurring in children from infancy to adolescence (1). Skin diseases are an important part of paediatric morbidity as children have unique anatomical, physiologically and immunological features that affect their susceptibility to disease and the clinical picture. Chronic or recurrent dermatoses tend to disrupt sleep, school attendance, socialization, psychological functioning, and overall quality of life, along with physical symptoms such as itching, pain, scaling, and discomfort. Recent data emphasize that paediatric dermatological diseases remain important clinical and public health problems worldwide.

The epidemiology of pediatric dermatoses is very different and is influenced by geographic, age, sex, climatic, seasonal, socioeconomic, household crowding, personal hygiene, nutritional status, environmental exposures, and access to health care. The distribution of pediatric skin diseases has been shown to be significantly different from place to place in recent Indian studies. In a tertiary care study conducted in Western India, infections/infestations were the commonest, followed by eczematous disorders and papulosquamous disorders. Similarly, investigations in children that have been performed during hospital stays have revealed a variety of symptoms, from mild infections to inflammatory, hereditary and serious skin diseases. (2, 3)

The skin diseases are communicable and continue to cause a significant disease burden in children, particularly among low- and middle-income groups. Hundreds of millions of new cases of infectious skin diseases were estimated in 2021, and bacterial and fungal infections made up a large proportion of this in children. One of the highest incidences of infectious skin diseases was found in children in India. Scabies is another major concern in pediatrics as it is a contagious skin disorder that is related to crowding in households, close body contact, and is still a problem. The clinical guidelines have been updated to give special attention to the importance of correct diagnosis, proper treatment, and control of

relevant contacts to limit the spread of disease and re-infection (4).

In addition to infectious diseases, non-infectious diseases are now acknowledged to play a significant role in the morbidity of children. Atopic Dermatitis (AD) is a chronic inflammatory skin condition that affects children and is very common. In 2021, the global prevalence of atopic dermatitis was estimated to be around 72.4 million children, yet there was a significant variation in the prevalence across the geographical regions. Current epidemiological studies also underline the role of genetic, environmental, socio-economic and lifestyle risk factors in its incidence. Recommendations for the treatment of AD in India have also focused on treating severity, providing treatment education, and personalized treatment. Specific consensus recommendations also focused on standardized diagnosis, treatment of severity, treatment education and individualized treatment of AD. (5)

Tertiary-care hospitals can be a valuable environment to assess dermatoses in children, as they treat common diseases as well as patients with more severe, refractory, recurrent, hereditary, and/or complex diseases that are difficult to diagnose. Many Indian studies in recent times have shown the wide range of conditions seen in tertiary paediatric dermatology care (4, 6). Hence, the need for systematic assessment of the clinical and epidemiological characteristics of paediatric dermatoses for enhancing diagnostic accuracy, treatment, preventive measures, and healthcare planning. The present study was conducted to assess the clinical spectrum and epidemiological profile of paediatric dermatoses in a tertiary care hospital with special reference to age, sex, clinical diagnosis, and relevant epidemiological characteristics (4, 7, 8).

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2 | METHOD

Research design

The hospital-based, observational cross-sectional study conducted to evaluate the clinical spectrum and epidemiological profile of Pediatric Dermatoses. The study was conducted in the tertiary care hospital among 140 paediatric patients those who were diagnosed with dermatose and attended the Dermatology Outpatient Department (OPD), for a duration of years from 2019 to 2020. The study included children of age below 16 years of age. The participants were evaluated clinically, and relevant demographic and clinical information was recorded using a structured data collection proforma. Both written and verbal consent were taken from the children and their families. Selection was done based on the predefined inclusion and exclusion criteria.

Inclusion criteria

- Pediatric patients attended the Dermatology Outpatient Department (OPD) were selected for the study.
- Patients below 16 years of age were included in the study.
- Informed consent required for the study.

Exclusion criteria

- Those who have received with the immunosuppressive therapy were excluded.
- Patients with HIV infection were not allowed
- Those who were affected with sexually transmitted infections were excluded.

Procedure

All patients were selected on the basis of the predefined inclusion and exclusion criteria and informed consent were taken for the study from their guardians. The ethical approval was obtained from Institutional Ethical Committee. All of the patients were investigated with the demographic and clinical details including the age, sex, presenting complaints, duration of lesions, and prior history, which was recorded by the use of the structured proforma. Each of the patients underwent with dermatological assessment and the diagnosis was performed on the basis of the clinical findings. The conditions of diagnosis were classified into major groups of dermatoses

and the infections were caused by bacterial, viral, fungal, and parasitic infections. Collected data were recorded and was evaluated on the basis of the age and the type of the dermatosis.

Statistical analysis

The data analysis was done by the use of SPSS version 27. Variables such as age group, gender, and type of dermatosis were summarized by the use of number and percentages. Continuous variables such as age were analysed by the use of mean $\pm$ standard deviation (SD).

3 | RESULTS

Among the 140 pediatric patients, infection and infestations were the most frequently reported dermatoses, occurring in 85 patients (60.71%). Eczematous diseases were the second most common category, affecting 50 patients (35.71%). Papulosquamous and hypersensitivity diseases were each reported in 12 patients (8.57%), followed by acne in 8 patients (5.71%). Pigmentary diseases and nutritional dermatoses were observed in 6 patients (4.29%), while hair, nail and keratinisation disorders, other dermatoses, nevi, and miliaria accounted for 5 (3.57%), 7 (5.00%), 3 (2.14%), and 2 (1.43%) patients, respectively (Table 1).

stated that out of 55 cases of infection and infestations, only 20 cases (36.36%) were bacterial infection. The most common frequent bacterial infection was the Impetigo among 10 cases (50%), which was followed by the 4 cases (20%) of pyoderma and 3 cases each (15%) showed the folliculitis and furuncle. The bacterial infections were mostly common in the 11 to 16 years of age group, consisting of 7 cases (35%), which was followed by the 6 cases (30%) in both of the 1–5-year and 6–10-year groups. 1 case (5%) was noted below 1 year. All of the age group showed Impetigo and frequently noted among children aged 1–5 years (25%). Old children group were predominant with Pyoderma and folliculitis, while 1–16-year age groups were observed with furuncle.

stated that 15 cases (27.27%) out of 55 cases of infection and infestations were contributed to viral infection. The most common viral infection is

TABLE 1: Distribution of different dermatoses among the study participants

Dermatoses	Number (n)	Percentage (%) out of 140 patients
Infection and Infestations	85	60.71
Eczematous Diseases	50	35.71
Papulosquamous Diseases	12	8.57
Hypersensitivity Diseases	12	8.57
Acne	8	5.71
Pigmentary Diseases & Nutritional Dermatoses	6	4.29
Nevi	3	2.14
Miliaria	2	1.43
Hair, Nail & Keratinisation Disorders	5	3.57
Other	7	5
Total	140	100

TABLE 2: Age-wise Distribution of Bacterial Infections among Pediatric Patients

Type	<1 yr	1–5 yr	6–10 yr	11–16 yr	Total
Impetigo	1 (5%)	5 (25%)	3 (15%)	1 (5%)	10 (50%)
Pyoderma	–	–	1 (5%)	3 (15%)	4 (20%)
Folliculitis	–	–	1 (5%)	2 (10%)	3 (15%)
Furuncle	–	1 (5%)	1 (5%)	1 (5%)	3 (15%)
Total	1 (5%)	6 (30%)	6 (30%)	7 (35%)	20 (100%)

the Verruca, accounted for 7 cases (46.67%) which were followed by 2 cases (13.33%) for each of the varicella, exanthem and hand-foot-mouth disease. 1 case each (6.67%) for Molluscum and herpes while Gianotti–Crosti showed no cases. Childrens of age between 11 to 16 years showed viral infection accounted as 6 cases (40%), which was followed by 5 cases (33.33%) within 6–10 years of age. 3 cases (20%) noted for children of age between 1 to 5 years of age, while 1 case (6.67%) noted below 1 year.

showed out of total 140 cases of infections and infestations, 50 cases (35.71%) were eczematous diseases. The most common form of eczema in this study was pityriasis alba, occurred in 14 cases (28%), while atopic eczema accounted for 10 cases (20%). Contact eczema and seborrhoeic eczema both accounted for 7 cases (14%), photodermatitis 6 cases (12%), intertrigo 5 cases (10%), and pompholyx 1 case (2%). Eczematous diseases occurred most commonly among children aged 1-5 years, where 15 cases (30%) had occurred, while 6-10 years accounted for 14 cases (28%). Age group under one year accounted for 10 cases (20%) and age group above 11-16 years had 11 cases (22%).

Figure 1 showed the distribution of infectious dermatological diseases according to the type of infection. The highest percentage (36.36%) was attributed to bacterial infections, signifying that bacterial infections were the most common types of infectious dermatoses. The next common types were the viral infections, accounting for 27.27% of all infections. The third most common type of infection was parasitic, accounting for 18.18%. Fungal infections followed with 18.19%. Consequently, bacterial and viral infections accounted for 63.63% of infectious dermatoses, while parasitic and fungal infections made up the other 36.37%.

4 | DISCUSSION

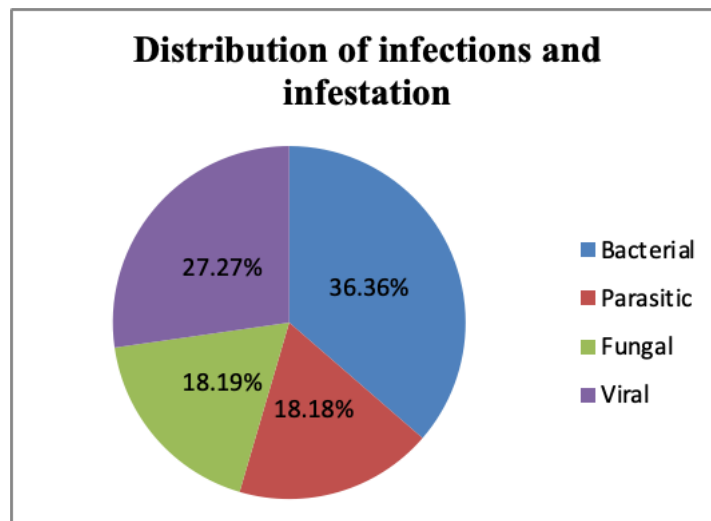
In the present study, it is illustrated that dermatological disorders have a wide range of clinical presentations in children seen in a tertiary care hospital. The results should be presented in the background of recent publications demonstrating that there are many geographical and demographic differences in paediatric dermatoses. There may be some differ-

TABLE 3: Age-wise Distribution of Viral Infections among Pediatric Patients

Type of Infection	<1 yr	1–5 yr	6–10 yr	11–16 yr	Total
Verruca	0	1	2	4	7 (46.67%)
Varicella	0	1	1	0	2 (13.33%)
Exanthema	0	1	1	0	2 (13.33%)
Hand-Foot-Mouth	1	0	1	0	2 (13.33%)
Molluscum	0	0	0	1	1 (6.67%)
Herpes	0	0	0	1	1 (6.67%)
Gianotti–Crosti	0	0	0	0	0 (0%)
Total	1 (6.67%)	3 (20%)	5 (33.33%)	6 (40%)	15 (100%)

TABLE 4: Age-wise Distribution of Different Types of Eczematous Diseases among Pediatric Patients

Type of Eczema	<1 yr	1–5 yr	6–10 yr	11–16 yr	Total
Pityriasis alba (P. alba)	1 (2%)	7 (14%)	4 (8%)	2 (4%)	14 (28%)
Atopic eczema	3 (6%)	3 (6%)	4 (8%)	0 (0%)	10 (20%)
Contact eczema	0 (0%)	2 (4%)	2 (4%)	3 (6%)	7 (14%)
Seborrhoeic eczema	4 (8%)	1 (2%)	0 (0%)	2 (4%)	7 (14%)
Photodermatitis	0 (0%)	1 (2%)	3 (6%)	2 (4%)	6 (12%)
Intertrigo	2 (4%)	1 (2%)	1 (2%)	1 (2%)	5 (10%)
Pompholyx	0 (0%)	0 (0%)	0 (0%)	1 (2%)	1 (2%)
Total	10 (20%)	15 (30%)	14 (28%)	11 (22%)	50 (100%)

**FIGURE 1: The distribution of the infections and infestation**

ences in the results reported from one study to another because of geographic differences in climatic conditions, socioeconomic status, age distribution, duration of study, referral patterns, definitions of disease, and behavior of patients with regard to seeking health care services. Over the past few years, the Indian evidence has definitely established that the role of infectious, inflammatory, allergic and other

dermatoses is different from region to region. (9, 10)

Infections and infestations continue to be a substantial portion of the morbidity of children. A recent tertiary-care study conducted in Gujarat on 500 children revealed that the highest percentage of cases (37%) were infections and infestations, followed by fungal and viral infections (9). The findings are consistent with the worldwide results of the high burden

of infectious skin diseases in children. The Global Burden of Disease Study reported a number of 685 million new cases of infectious skin diseases in children in 2021, with fungal infections contributing the most, followed by bacterial and viral infections. The incidence rate in India was amongst the highest in the world. This highlights the continued importance of early diagnosis, appropriate antimicrobial therapy, promotion of hygiene, and prevention of transmission (11).

Scabies is of special concern in children due to the ease of transmission and relationship to close interpersonal relationships. The revised international guidelines focus on clinical recognition, therapeutic selection and treatment, and avoidance of reinfection and transmission. Chronic disease can be seen in dense populations (such as homes or schools) with untreated contacts. However, the treatment of the affected child is not the only objective of the diagnosis of scabies; consideration should also be given to household and community preventive measures (7).

The eczematous and inflammatory dermatitis are also an important segment of paediatric dermatoses. The chronic relapsing course and significant impact on quality of life are the reasons why atopic dermatitis is a particularly significant condition. Although overall prevalence rates have slightly decreased in the last 20 years, a recent global systematic analysis estimated that there were 72.4 million children with atopic dermatitis in 2021. Epidemiological reviews indicate that genetic susceptibility is associated with aspects of the environment, socioeconomic and geographical factors that influence disease occurrence (12). The recently adopted Indian STAND AD consensus reiterates the objective of providing standardized diagnostic criteria, severity assessment, patient education, topical or systemic treatment based on the severity, and individualized moisturization. (5)

In clinical terms, age distribution of pediatric dermatoses is significant due to the fact that a child's susceptibility to disease changes as a function of age. Infants and toddlers have distinct problems related to their underdeveloped epidermal barrier function, exposure to moisture, infection, and inflammatory disorders. Recently, a review was written with a

particular focus on the wide spectrum of clinical presentations of common dermatoses in older infants and toddlers and the need to identify the systemic symptoms associated with them. Children and adolescents are at a higher risk of exposure to pathogenic organisms and physical irritants in the environment and may be more at risk of exposure to environmental allergens, and the latter are more likely to develop disorders related to hormonal changes. Thus, clinical assessment of patients may be more accurate based on age-specific assessment (8). Pediatric dermatology also proves to be a field of severe and complex disorders other than common outpatient conditions in hospital-based studies. Recently, inflammatory disorders such as childhood psoriasis and erythroderma were noted to be the most common, and hereditary disorders such as keratinization and mechanobullous diseases were noted to be the least common in a study carried out in a tertiary care center in Southern India of hospitalized children. Similarly, a study of paediatric skin biopsy specimens from a tertiary care centre in India revealed that there was a significant proportion of papulosquamous and infectious disorders, particularly in the age group of adolescents (2). The results highlight the need for dermatological special services and good diagnostic work-ups when the clinical presentation is unusual or treatment results are not satisfactory (13).

Season occurrence by season, to corroborate environmental and climatic factors' influence on childhood skin disease. Certain infections and infestations may flourish in warm, moist conditions, and others, inflammatory or eczematous conditions, may be exacerbated by fluctuations in humidity and temperature (10, 12). The observed spectrum may still be affected by variation in al. One recent Indian study on pediatric dermatoses found that there were differences in disease. The overall results of the present study confirm the heterogeneous nature of pediatric dermatology and the necessity to combine clinical examination with useful epidemiological data. So early identification, timely treatment, hygiene education, prevention of communicable disease, and timely referral are key factors in decreasing morbidity. Better dermatological education of paediatricians and primary-care doctors may also aid in earlier diagnosis, as many skin conditions among children are

easily misdiagnosed. Epidemiological surveillance at tertiary care centers is thus useful for detecting changing disease patterns and designing disease prevention and control strategies for the region. (14, 15)

5 | CONCLUSION

The study concluded that the infectious and eczematous dermatose was predominant among the children with dermatological disorders. The largest number of cases were under the infections and infestations (39.29%) including bacterial (36.36%), viral (27.27%) infections and parasites and fungi with relatively small contribution. Among bacterial infections impetigo was the most common (50%) type of infections occurring more frequently in children aged from 1 to 5 years, while the other group of children aged from 6 to 10 was characterized by pyoderma and folliculitis. The most frequently viral infection was verruca (46.67%) which mostly occurred in the age group 11-16 years. Eczematous disorders were 21.43% of all dermatoses with pityriasis alba (28%) as the leading type of such disorders followed by atopic eczema (20%).

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