

PREVALENCE OF CHILDHOOD SKIN DISORDERS ATTENDING AT OUTPATIENT PEDIATRIC HOSPITAL

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ABSTRACT

Objective: The objective of the study was to study the prevalence of various skin diseases in pediatric population.

Methods: A prospective observational study was conducted at private children's outpatient clinic in Warangal from March to August 2018 with the prior approval from the Institutional Ethical Committee BIPS/IEC/2018/P8. A total of 200 patients with various skin diseases of age group <17 years were included in the study.

Results: Out of 200 pediatric skin disorders, male children 138 (69%) outnumbered female children 62 (31%). The mean age of the study population was found to be 5.85±4.11 years. About 64% of the patients are from rural area and 36% are from urban. The percentage of skin disorders is allergic infections (26%), bacterial infections (23%), viral infections (11%), fungal infections (7.5%), parasitic infections (6%), autoimmune disorders (4%), and skin adnexa (2.5%).

Conclusion: Our study concludes that the prevalence of allergic and bacterial skin infections was found to be common among male children from rural area.

Keywords: Skin disorders, Pediatrics, Prevalence, Eczema, Impetigo, Chickenpox, Tinea corporis.

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INTRODUCTION

Skin development is a non-stop process. In pediatrics skin, all the anatomical structures are present, but they are immature when compared to the skin of adults [1]. However, infants have smaller corneocytes and thinner stratum corneum which lasts until 2 years of age. When compared with adults, skin of newborns contains fewer fibrils and decreased dermal collagen, thereby making it more prone to skin diseases [2]. In India, skin diseases are becoming increasingly important due to many factors such as varied climate, genetic, age, overcrowding, nutrition habits, poor hygiene, and pollution [3]. Pediatric dermatology deals with the diagnosis, treatment, and prevention of skin diseases occurring in childhood [4,5]. Special skills are required while dealing with children's having skin diseases as they differ in clinical presentation, treatment, and prognosis [6]. Children being the major part of the population are often neglected, especially neonates having skin problems are not taken seriously by the community [7]. Skin diseases in rural areas are more prevalent due to their poverty and lack of awareness among the people [8]. Skin infection can be defined as the invasion and multiplication of microorganism such as bacteria, fungal, viral, or parasites on the skin [9]. The previous studies from other parts of the country had reported the pattern of skin diseases, there appears to be a recent shift from higher frequency of skin infections and infestations to appearance of eczemas as leading cause of skin morbidity [10-12]. There have been few studies done on the prevalence of skin disorders from India. Our present study attempts to provide a better understanding of various skin disorders in children with figures.

METHODS

Study design and settings

A prospective observational study was conducted from March to August 2018 at private children hospital by taking informed consent directly

from patients and patient representatives who attended the clinic regarding their skin complication with the prior approval from the Institutional Ethical Committee BIPS/IEC/2018/P8.

Study size

In our study, 200 pediatric patients with skin disorders were enrolled and noted.

Study criteria

Inclusion criteria

Pediatric population with skin disease of age <17 years who are attending outpatient clinic during the study period were included in the study.

Exclusion criteria

1. Patients above 17 years are excluded from the study
2. Children with chronic diseases are excluded from the study
3. Children who having skin manifestation as a part of systemic diseases are excluded from the study.

Materials

A predesigned pro forma was used for collecting data which include patient demographics such as age, gender, locality, duration of illness, type of infection, symptoms, and treatment.

RESULTS

Out of 200 patients, males were 138 (69%) and females were 62 (31%). The mean age of the study population was found to be 5.85±4.11 years. Among 200 studied patients, 64% of patients attended to the outpatient clinic were from rural areas and about 36% of patients were from urban areas. The children were classified according to the age group:

Infants (0–2 years), preschool (2–5 years), school age (between 5 and 12 years), and adolescents (12–17 years), as shown in Fig. 1.

Types of skin infections observed in our study were allergic infections, bacterial infections, viral infections, fungal infections, arthropod infections, unknown cause infections, genodermal, sweat glands, autoimmune infections, nutritional, mutation of the SLC39A4 gene, in born error metabolism, photo allergy, physiological, and friction blister, as shown in Table 1.

Bacterial infections

Among 200 cases, the prevalence of bacterial infections (n=46) was impetigo 19 (41.3%), folliculitis 10 (21.7%), furuncle 7 (15.2%), pyoderma 4(8.6%), hordeolum externum 3 (6.5%), ecthyma 2 (4.3%), and facial cellulitis 1 (2%), the examples of bacterial skin infections are shown in Figs. 2 and 3.

Table 1: Types of skin infections observed in children

Types of skin infections	Number of patients (%) (n=200)
Allergy	52 (26)
Bacterial	46 (23)
Viral	22 (11)
Fungal	15 (7.5)
Arthropod	12 (6)
Unknown	11 (5.5)
Genodermal	10 (5)
Sweat glands	1 (0.5)
Pilosebaceous glands	3 (1.5)
Eccrine sweat glands	5 (2.5)
Autoimmune	8 (4)
Nutritional	8 (4)
Mutation of the SLC39A4 gene	2 (1)
IEM	2 (1)
Photo allergy	1 (0.5)
Physiological	1 (0.5)
Friction blister	1 (0.5)

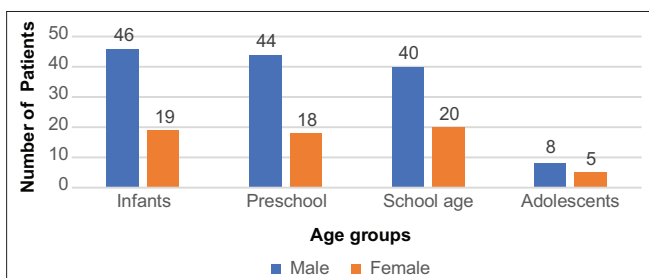


Fig. 1: Age group distribution among pediatrics



Fig. 2: Impetigo

Allergic infections

In allergic infections (n=52), the prevalence of eczema was 28 (53.8%) followed by papular urticaria 21(40.38%), prurigo simplex 2 (3.84%), friction blister 1 (1.92%), the examples of allergic infections were represented in Figs. 4-7.

Autoimmune disorders

In autoimmune disorders (n=8), the prevalence of alopecia were 3 (37.5%) followed by psoriasis 2 (25%), Vitiligo 1 (12.5%), Down syndrome 1 (12.5%), Systematic lupus erythematosus 1 (12.5%), some of the examples of auto-immune disorders were represented in Figs. 8 and 9.



Fig. 3: Folliculitis

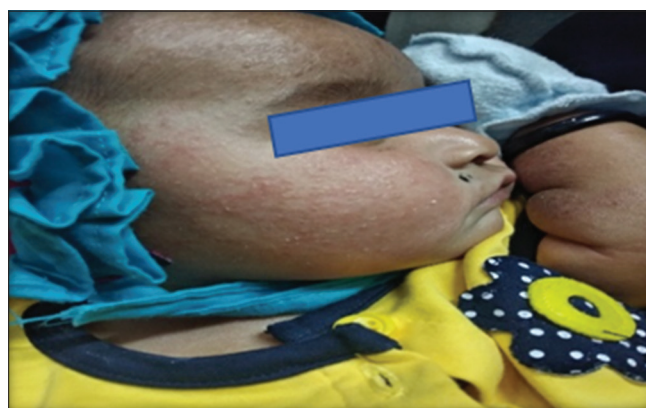


Fig. 4: Atopic dermatitis



Fig. 5: Urticaria

Skin adnexa

Among 9 skin adnexa cases, the prevalence of Miliaria rubra were 5 (55.5%) followed by acne vulgaris 3 (33.3%), pompholyx 1 (11.1%), an example was shown in Fig. 10.

Fungal infections

In fungal infections (n=15), the highest prevalent is tinea corporis 5 (34%), the second highest prevalent is tinea versicolor 5 (20%) and tinea capitis 3 (20%), onychomycosis 2 (13%), and oral candidiasis 2 (13%), the examples of fungal infection are represented in Figs. 11 and 12.

Genodermal diseases

In genodermal diseases (n=10), the highest prevalent was ichthyosis vulgaris 2 (25%) and neurofibromatosis type 1 2 (25%), the second highest prevalent is aplasia cutis congenita 1 (12.5%), hemangioma 1 (12.5%), lichen stratus 1 (12.5%), and nevus 1 (12.5%). An example of genodermal infections is shown in Fig. 13.

Viral infections

Among 22 viral infection cases, the highest prevalent viral infection is varicella 14 (64%), the second highest prevalent is viral exanthema 5 (23%), herpes gingivostomatitis 1 (5%), herpes labialis 1 (5%), and herpes simplex 1 (5%). An example of viral infection was shown in Fig. 14.



Fig. 6: Seborrheic dermatitis



Fig. 7: Contact dermatitis



Fig. 8: Alopecia areata



Fig. 9: Scalp psoriasis

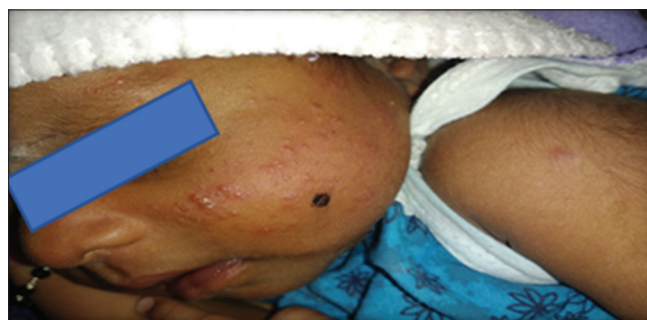


Fig. 10: Acne vulgaris



Fig. 11: Tinea capitis

Nutritional cases

A total of eight nutritional cases among children were found and depicted in Table 2.

DISCUSSION

The Epidemiological studies on skin disorders were influenced by many factors such as genetic, geographical area, varied climate, socioeconomic factors, living conditions, and medical resources play a major role. Based on our finding in relation to sex, male predominance was observed. The male-to-female ratio was 22.5:1 which was complying with a study from India conducted by Sardana et al. [13] where male predominance was observed, male-to-female ratio was 1.07:1.

According to age, many cases were observed in children under 14 years of age and lowest number of cases was observed in infantile group. On the other hand, when the results were assessed according to etiology, allergic skin infections (26%) and bacterial skin infections (23%) were most prevalent. In allergic skin infections, eczema (14%) was the most prevalent among the studied groups. These eczematous skin diseases were in the second position in studies conducted in India (26.95%) by Sardana et al. [13] and Pakistan 21% by Yasmeen and Khan [14].

In many parts of the world, dermatitis was in the top list among the studied groups of skin diseases. Frequency of atopic dermatitis was observed high in our study which contributes to 2% of all cases. It was reported 2.6% in Egyptian study conducted by Mostafa et al. [15]. In other areas, the frequency of atopic dermatitis was found to be high in the study conducted by Sethuraman and Bhari [16]. Lower incidence of atopic dermatitis and eczema was found in the study conducted by Dadapeer et al. [17]. This imbalance between the two studies can be explained by the difference in industrialization, nutritional habits. The second high-frequency allergic infection in our study is papular urticaria (10.5%). Studies from India reported 3.59% conducted by Sardana et al. [13] and 5.27% conducted by Karthikeyan et al. [18]. In the present study, it was most prevalent in below 8 years of age-old children. The frequency of papular urticaria may be high due to the varied climate and insect bites.

Table 2: Number of nutritional cases in pediatrics

Types of nutritional cases	Number of patients (%) (n=8)
Acrodermatitis enteropathy	2 (25)
Angular cheilitis and glossitis	2 (25)
Bitot's spot	2 (25)
Pellagra	1 (12.5)
Phrynoderma	1 (12.5)

Bacterial skin infection (23.4%) is the second most frequent and prevalent infectious skin disease. Egyptian study on prevalence of skin diseases among infants and children conducted by Mostafa et al. [15] shows similar results. In bacterial infections, impetigo was the most prevalent representing (9.5%) of all cases. On the other hand, high frequency of impetigo (49.4%) observed in a study which was conducted by Yeoh et al. [19]. In our results, the highest frequency of bacterial infection can be due to the hot humid climate, overcrowding, and low socioeconomic factors.

Viral infections represent (11%) third most frequent skin infection. The prevalence of viral infections was low (9.90%) in the study conducted in Turkey by Polat et al., [3] and high prevalence (19.7%) in the study conducted by Kiprono et al. [20] in Switzerland. In viral infections, the most common one was varicella representing 7% of all cases with viral infections. High frequency of chickenpox 9.15% by the study conducted by Essmat et al. [21].

Fungal infections (5%) revealed fourth high frequency in our study. Fungal infections were reported to be high (15.8%) in Nigeria study conducted in children by Ogunbiyi et al. [22] and reported high (18.8%) in the study conducted by Kelbore et al. [23] in Southern Ethiopia. The reason for such imbalance between various reports may be due to the variation in fungal species prevalence in different areas. Tinea corporis, tinea capitis, and tinea versicolor were in top list among the group of fungal infections. In our study, tinea versicolor is most prevalent, this is compared with the study conducted by Ravindra et al. [24] which showed that tinea versicolor is the most common. On the other hand, next most prevalent fungal infection is tinea capitis. This shows similarity with Iraq studies conducted by Fathi and Al-Samarai [25] and Palestine studies conducted by Ali-Shtayah et al. [26]. A study in Pakistan [27] reveals that fungal infections were the most common (20.6%).



Fig. 13: Aplasia cutis congenita



Fig. 12: Tinea unguium



Fig. 14: Varicella/Chicken pox

Parasitic skin diseases were fifth in frequency in our study 6%. Among parasitic skin diseases, scabies was found to be more prevalent representing 6% of all cases. On the other hand, high prevalence rate of scabies 21.7% was revealed by Javed and Jairamani [28] at Karachi.

In autoimmune skin disorders, alopecia, psoriasis, and vitiligo were found to be most prevalent. In our study, vitiligo was the second most prevalent autoimmune skin disorder, this is compared with the study conducted by Hafi *et al.* [29].

CONCLUSION

From our study, we have concluded that allergic skin reactions and bacterial skin infections are more prevalent. In allergic infections (eczema and papular urticaria), bacterial infections (impetigo, folliculitis, and furuncle) in viral skin infections, varicella, and viral exanthema and in autoimmune disorders, alopecia areata and in fungal infections, tinea corporis and in disorders of skin adnexa, acne and in nutritional skin diseases, phrynoderma and in genodermal cases, neurofibromatosis type-1 and ichthyosis are majorly affected. Based on the results of our study, we have found that male children were majorly affected with skin diseases than females. Most of the children with skin diseases attended to the clinic were from rural areas; therefore, knowledge of the skin diseases, early diagnosis, treatment, and preventive measures for the affected children need to be taken to breakout the skin diseases.

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AUTHORS' CONTRIBUTIONS

Nandini Thummanapally, Kavitha Lawdyavath, and Charandas Guruva have contributed toward literature search, data collection, and manuscript writing; PVK Shastry contributed toward concepts and design of work; Deepthi Enumula contributed toward concept, design, manuscript editing, and data analysis; and Shyam Sunder Anchuri contributed toward manuscript editing.

CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest.

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