

Prescription Pattern in Dermatological Conditions of the Pediatric Population

Muhammad Mustafa Abdulla¹, Soumya A², Rangunatha Shivanna³

¹Pharm D intern, Department of Pharmacy Practice, Acharya & BM Reddy College of Pharmacy, Bengaluru, Karnataka

²Assistant Professor, Department of Pharmacy Practice, Acharya & BM Reddy College of Pharmacy, Bengaluru, Karnataka

³Head of Department, Dermatology ESIC MC-PGIMSR & Model Hospital, Rajajinagar Bengaluru, Karnataka

Abstract

Dermatological disorders are common medical conditions that impact an individual's skin and mucous membranes. Their primary symptoms include redness, itching, rashes, and sometimes even deformity. Skin disorders come in a wide range of forms, from common conditions like eczema and acne to more serious conditions like dermatitis and psoriasis. The goal of the study is to assess prescription pattern of pediatric population diagnosed with any skin disease. An observational descriptive study was carried out among 120 samples in the Out-patient Department of Dermatology, ESIC MC - PGIMSR & Model Hospital, Rajajinagar, Bengaluru. The data was collected by using self-designed data collection form. All information's were processed and analyzed by using Microsoft excel. It was found that out of 120 subjects included in the study, higher percentage was in males (54%) than females (46%) in which age group (12-18, n= 75) was in majority. In this study Non-infective (46.67%) diseases were more compared to Infective diseases (36.30%), infestation (6.67%) and miscellaneous (10.37%). The most common route of administration was Topical route 69% (n= 251), in which the most common one was cream 36.6% (n= 135). Antifungals, 24.1% (n=88) were counted as the most prescribed in the list of common categories of drugs followed by antihistamines, antibiotics, corticosteroids. In the antifungals, fluconazole 3.84% (n=14) was the most prescribed in oral route and ketoconazole 7.12% (n=26) was the most prescribed in topical route. Out of 120 subject, 39 were prescribed with 4 or more drugs, this makes 32.5% of the total prescription having polypharmacy. The combination therapy (19.7%) is than that of monotherapy (80.3%). A total of 12 drugs were listed in NLEM 2022, out of which only 7 topical drugs were found to be prescribed in the current study. Out of the total 36 topical drugs used in the department, 29 drugs were found to be not listed in NLEM-2022. The prescription pattern study in pediatric skin disease provides important information about how children with dermatological conditions are currently treated. The results emphasize the variety of drugs that are prescribed and the complexity of pediatric skin conditions. The most preferred prescribing therapy was monotherapy. Topical rote of administration was the most prescribed, it might be because of the onsite action and less side effects of topical medications compared to other route of administration.

Keywords: Prescription pattern, Pediatric skin disease, pediatric skin conditions, prescription pattern of pediatric population.

1. Introduction

Dermatological disorders are common clinical conditions that affect the skin and mucous membranes, manifesting as rashes, redness, itching, or even disfigurement. These conditions range from common issues like acne and eczema to more serious ones such as psoriasis, dermatitis, and skin cancer, significantly impacting individuals' quality of life, mental health, and self-esteem. Skin disease patterns vary across nations and regions, influenced by factors like socioeconomic status, climate, diet, and genetics. Dermatological conditions result from various causes, including autoimmune reactions, infections, allergies, and hereditary factors. Timely diagnosis and appropriate treatment using topical or oral medications, and advanced therapies in severe cases, are crucial for management. Dermatologists play an essential role in reducing the physical and emotional burden of skin diseases on individuals [1,2].

Globally, skin and subcutaneous diseases were the 18th leading cause of disability-adjusted life years (DALYs) in 2013, accounting for 41.6 million DALYs and 39.0 million Years Lost due to Disability (YLDs). These diseases ranked as the fourth most common cause of disability globally (excluding mortality) and showed a 46.8% increase between 1990 and 2017. Pediatric skin disorders are also significant contributors to family medicine outpatient visits, with prevalence rates ranging from 42.68% to 89.72% for infectious conditions and 53.15% to 58.07% for noninfectious conditions in various studies [14]. Pediatric skin diseases are particularly prevalent due to children's developing skin, which is more susceptible to inflammation and irritation. Factors such as frequent minor injuries, exposure to germs, and extreme temperatures contribute to the higher incidence of skin conditions among children. School-aged children face additional risks of communicable skin diseases due to social interactions, which can lead to absenteeism, academic challenges, and emotional distress. Conditions like acne, atopic dermatitis, and infantile hemangiomas can significantly impact children's self-esteem, social interactions, and relationships with caregivers [9,11,13].

In India, socioeconomic disparities, cultural diversity, and regional variations in climate and healthcare access influence the prevalence and management of skin diseases. Many patients do not seek treatment until symptoms become severe due to a lack of education or awareness, leaving up to 80% of affected individuals without medical attention. This highlights the need for targeted healthcare initiatives to address underserved populations [12].

Common Pediatric Skin Disorders

Infectious Disorders: Among infectious skin conditions, pyodermas and fungal infections are the most prevalent, with fungal infections like tinea showing prevalence rates between 12.8% and 46.25%. Tinea infections are caused by dermatophytes and present as red, itchy rashes. Variants include tinea capitis (scalp), tinea corporis (body), tinea cruris (groin), and tinea pedis (feet) [17].

Noninfectious Disorders: Eczema is the most common noninfectious condition, with prevalence rates ranging from 16.17% to 33.93%. It encompasses several forms, including atopic dermatitis, which is chronic and characterized by redness, itching, and dry skin patches. Other forms include seborrheic dermatitis (dandruff) and contact dermatitis, which arises from allergic or irritant reactions. Noninfectious conditions like pityriasis alba, keratosis pilaris, and acne are also frequently observed in children [12,13].

Acne: Acne is a common condition, especially during adolescence, caused by the blockage of hair follicles with oil and dead skin cells. It manifests in various forms:

Comedonal Acne: Includes blackheads and whiteheads.

Inflammatory Acne: Characterized by redness and swelling caused by immune responses.

Cystic Acne: Deep, painful lesions that can lead to scarring.

Drug-Induced Acne: Triggered by medications like corticosteroids and lithium.

Hormonal Acne: Often seen during puberty or hormonal fluctuations in women [18].

Psoriasis: A chronic autoimmune disorder, psoriasis involves rapid skin cell production, forming thick, red, scaly patches, often on the scalp, elbows, knees, and lower back. Genetic, immune system, and environmental factors contribute to its onset. Psoriasis can lead to joint issues, such as psoriatic arthritis, and is often triggered by stress, infections, medications, or skin injuries [25].

Skin disorders, particularly visible ones, can have a profound impact on children's psychosocial well-being. Conditions like acne, atopic dermatitis, and port-wine stains can result in bullying, social isolation, and emotional distress. Acne and hidradenitis in adolescents are linked to higher risks of depression and suicidal ideation. Addressing the emotional and social aspects of these conditions is as important as their physical management, emphasizing the need for holistic care [7,12].

Dermatologists employ a range of diagnostic tools, including history-taking, physical examinations, laboratory tests, and skin biopsies when necessary. Early and accurate diagnosis is critical for effective treatment, which may involve lifestyle modifications, topical or oral medications, and advanced therapies in severe cases. Preventive strategies include maintaining good hygiene, avoiding allergens, and using sun protection. For children, minimizing irritants and managing environmental triggers are essential [14].

Understanding prescription patterns is vital for optimizing treatment, ensuring patient safety, and addressing healthcare disparities. Such studies reveal trends in drug usage, adherence to clinical guidelines, and potential safety concerns. For instance, the frequent use of antibiotics or corticosteroids in dermatology requires careful monitoring to prevent adverse effects and drug resistance. Studies have shown that inappropriate prescribing practices can lead to increased healthcare costs and compromised patient outcomes [15]. Prescription pattern analysis helps identify the most commonly used drugs for specific conditions, aiding in evidence-based treatment protocols. For pediatric dermatology, studies have highlighted the importance of balancing efficacy and safety, given children's unique physiological responses to medications. Researchers also track the emergence of adverse drug reactions, which informs updates to safety guidelines and clinical practices [14].

2. Results

Out of 120 patients, the majority were adolescents aged 12–18 years (62.5%, n=75), followed by schoolchildren aged 6–<12 years (22.5%, n=27). Infants (0–12 months) constituted 3.33% (n=4), while toddlers (1–2 years) and preschoolers (3–5 years) each accounted for 5.83% (n=7). Overall, 54% (n=65) of the subjects were males, and 46% (n=55) were females as shown in table 1.

Table 1: Distribution of Subjects based on Age-Gender

Age	Male	Female
Infants (0 month to 12 months)	2	2
Toddler (1 to 2 years)	5	2
Preschool (3 to 5 years)	5	2
School age child (6 to 11 Years)	11	16
Adolescent (12 to 18 years)	42	33

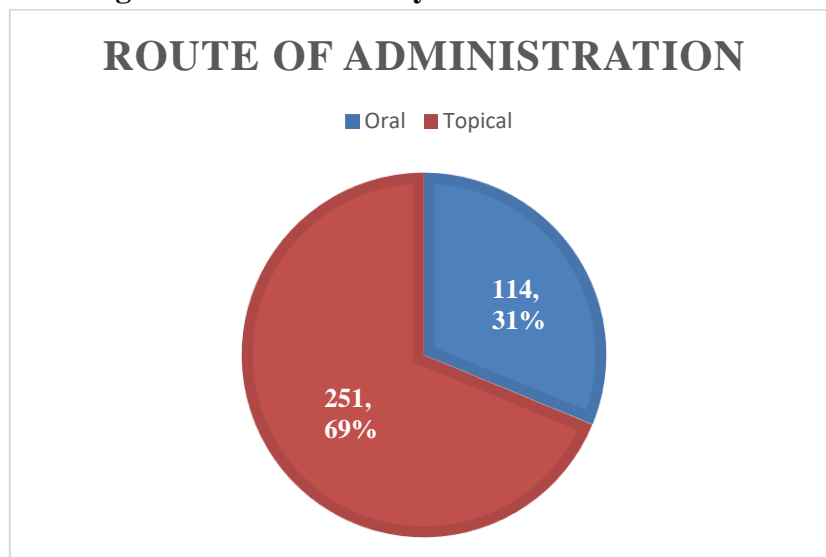
Most patients (87%, $n=105$) had a single disease, while 13% ($n=15$) presented with multiple conditions. The subjects were distributed based on the type of skin disease which constituted a total of 33 disease ailments out of which Tinea (22.22%, $n=30$) was the most common condition followed by dermatitis (18.52%, $n=25$), acne (17.78%, $n=24$), and scabies (6.67%, $n=9$) as shown in table 2.

Table 2: Distribution of disease

Sl. No.	Disease	Frequency	Percentage
1	Tinea	30	22.22%
2	Dermatitis	25	18.52%
3	Acne	24	17.78%
4	Scabies	9	6.67%
5	Urticaria	6	4.44%
6	PMLE	4	2.96%
7	Alopecia	3	2.22%
8	Vitiligo	3	2.22%
9	Impetigo	2	1.48%
10	Insect Bite reaction	2	1.48%
11	Post Inflammatory Hyperpigmentation	2	1.48%
12	Premature Canities	2	1.48%
13	Psoriasis	2	1.48%
14	Telogen Effluvium	2	1.48%
15	Amyloidosis	1	0.74%
16	Burn Injury	1	0.74%
17	Congenital Ichthyosis	1	0.74%
18	Erythema Intertrigo	1	0.74%
19	Furuncle	1	0.74%
20	Hand, foot and Mouth disease	1	0.74%
21	Herpes zoster	1	0.74%
22	Keratosis pilaris	1	0.74%
23	Lichen Simplex Chronicus	1	0.74%
24	Miliaria	1	0.74%
25	Onychorrhexis	1	0.74%
26	Other Manifestations of vitamin A Deficiency	1	0.74%
27	Phrynoderma	1	0.74%
28	Prurigo	1	0.74%
29	Pyoderma	1	0.74%
30	Sebaceous Adenoma	1	0.74%
31	Stretch Marks	1	0.74%
32	Wart	1	0.74%
33	Xerosis cutis	1	0.74%

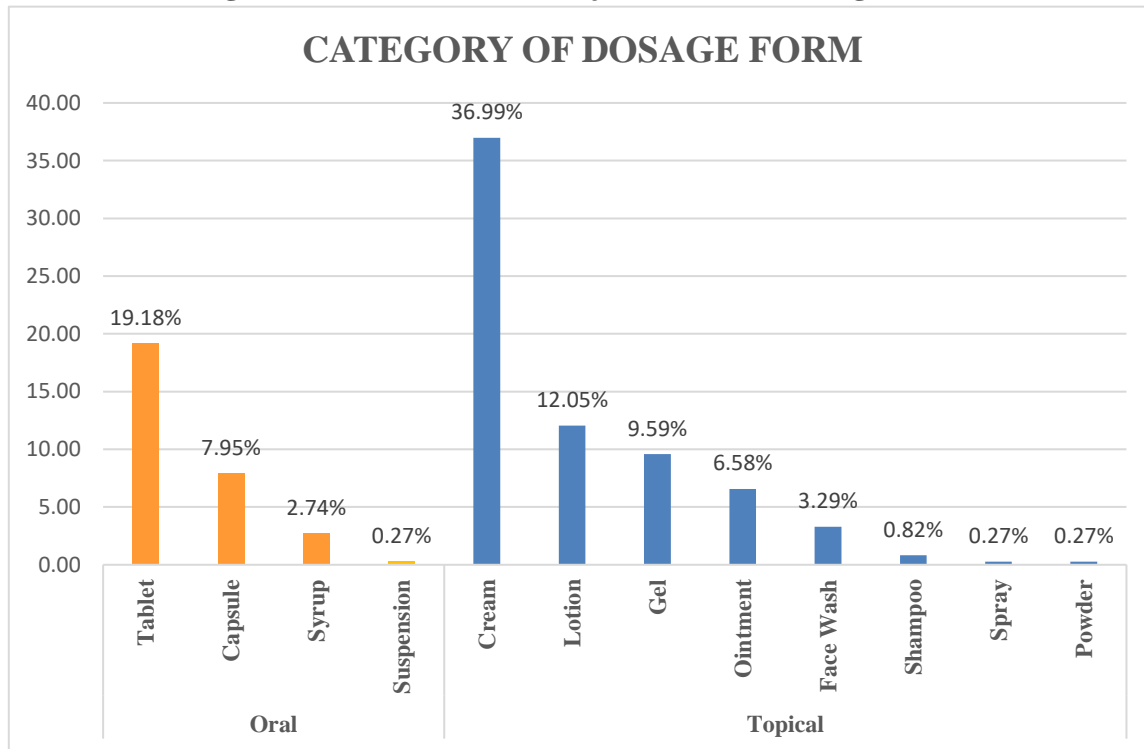
The study categorized dermatoses into three groups: infective, non-infective, and infestation/miscellaneous, encompassing a total of 33 disease ailments. Among infective dermatoses, fungal infections were the most common, with Tinea accounting for 22.22% (n=30), comprising seven types, the most prevalent being Tinea corporis (8.15%, n=11), followed by Tinea cruris (5.93%, n=8) and Tinea capitis (2.96%, n=4). Bacterial infections included Acne (9.63%, n=13), Impetigo (1.48%, n=2), and Furuncle (0.74%, n=1), while viral infections such as HFMD, Herpes zoster, and Warts each contributed 0.74% (n=1). In non-infective dermatoses, Dermatitis was the most prevalent at 18.52% (n=25), with Seborrheic dermatitis being the most common type (5.19%, n=7), followed by irritant contact dermatitis (2.96%, n=4), and atopic dermatitis/eczema and pityriasis alba (2.22%, n=3 each). Other non-infective conditions included Urticaria (4.44%, n=6), PMLE (2.96%, n=4), Alopecia and Vitiligo (2.22%, n=3 each), and Psoriasis, Insect Bites, and Post-Inflammatory Hyperpigmentation (1.48%, n=2 each), with rarer cases of Amyloidosis, Congenital Ichthyosis, and Phrynoderma (0.74%, n=1 each). Among infestation and miscellaneous dermatoses, Scabies was observed in 6.67% (n=9) of cases. Miscellaneous conditions included unspecified Acne (7.41%, n=10), rare cases of Prurigo, Pyoderma, Sebaceous Adenoma, and Stretch Marks (0.74%, n=1 each). Acne was the third most common condition overall, with five types identified. Acne vulgaris was the most prevalent (8.15%, n=11), followed by unspecified acne (7.41%, n=10), and comedones (0.74%, n=1), which are characterized by clogged hair follicles. The data is organized based on the routes of administration used for the treatment of skin diseases. Only two routes, Oral and Topical, were considered, while the Parenteral route was not utilized, as shown in Figure 1.

Figure 1: Distribution by Route of administration



The distribution of dosage forms used in the treatment of skin diseases is shown in Figure 2. Among oral dosage forms, tablets were the most frequently used, accounting for 19.18% (n=70), followed by capsules at 7.95% (n=29), syrups at 2.74% (n=10), and suspensions at 0.27% (n=1). For topical administration, creams were the most commonly used form, contributing 36.99% (n=135), followed by lotions at 12.05% (n=44), gels at 9.59% (n=35), ointments at 6.58% (n=24), face washes at 3.29% (n=12), shampoos at 0.82% (n=3), and sprays and powders, each at 0.27% (n=1) as shown in Figure 2.

Figure 2: Distribution of Subjects based on dosage forms



The study observed the usage of various drug classes, with antifungal agents being the most frequently prescribed (24.11%, n=88), followed by antihistamines (14.25%, n=52) and antibiotics (13.97%, n=51). Corticosteroids accounted for 10.14% (n=37), moisturizing agents 9.59% (n=35), and keratolytic agents 6.03% (n=22). Anti-pigmentation agents were prescribed in 4.11% (n=15) of cases, while anti-acne agents made up 3.84% (n=14). Nutritional supplements (2.47%, n=9), synthetic neurotoxic pyrethroids (2.19%, n=8), and immunosuppressants (1.64%, n=6) were used less frequently. Other categories, such as PPIs and skin protectants, each constituted 1.37% (n=5). The least utilized drug classes included anti-inflammatory and antipruritic agents (1.10%, n=4), vasodilators and skin cleansers (0.82%, n=3 each), analgesic and antipyretic drugs, anti-inflammatory agents, and anthelmintics (0.55%, n=2 each), as well as antiperspirants and NSAIDs (0.27%, n=1 each) as shown in Table 3.

Table 3: Distribution by class of drugs

SI No	Class of drugs	Frequency	Percentage
1	Antifungal	88	24.11%
2	Antihistamines	52	14.25%
3	Antibiotics	51	13.97%
4	Corticosteroid	37	10.14%
5	Moisturizing Agent	35	9.59%
6	Keratolytic agents	22	6.03%
7	Anti-Pigmentation	15	4.11%
8	Anti-acne agent	14	3.84%
9	Nutritional supplements	9	2.47%
10	Synthetic neurotoxic pyrethroid	8	2.19%

11	Immunosuppressants	6	1.64%
12	PPI	5	1.37%
13	Skin protectant	5	1.37%
14	Anti-inflammatory and Antipruritic	4	1.10%
15	Vasodilators	3	0.82%
16	Skin cleanser	3	0.82%
17	Analgesic and Antipyretic	2	0.55%
18	Anti-inflammatory	2	0.55%
19	Anthelmintic	2	0.55%
20	Antiperspirant	1	0.27%
21	NSAIDS	1	0.27%

The study analyzed the usage of antifungal drugs, with Ketoconazole being the most frequently prescribed (7.12%, n=26), followed by Terbinafine (5.21%, n=19) and Sertaconazole Nitrate (4.38%, n=16). Other antifungal agents included Fluconazole (3.84%, n=14), Luliconazole (1.92%, n=7), Itraconazole (1.10%, n=4), and Clotrimazole (0.55%, n=2). Among antihistamines, Levocetirizine was the most commonly used (8.77%, n=32), followed by Cetirizine (6.85%, n=25), with Ebastine being the least prescribed (0.27%, n=1). The study observed the usage of antibacterial drugs, with Clindamycin being the most frequently prescribed (4.93%, n=18), followed by Mupirocin (3.84%, n=14) and Doxycycline (2.74%, n=10). Other drugs included Cefixime (0.82%, n=3), Azithromycin (0.55%, n=2), and the combination of Fusidic Acid & Mometasone Furoate (0.55%, n=2). Less commonly prescribed were Amoxycillin with Clavulanic Acid and Silver Sulfadiazine, each accounting for 0.27% (n=1). The study highlighted the usage of corticosteroids, with Desonide being the most commonly prescribed (5.48%, n=20), followed by Mometasone (3.29%, n=12). Other corticosteroids included Clobetasol (0.55%, n=2), while Betamethasone, Prednisolone, and the combination of Hydrocortisone Acetate with Crotamiton were each prescribed in 0.27% (n=1) of cases as shown in Table 4.

Table 4: Distribution of major dermatological drugs based on their class

Class	Name of the drugs	Frequency	Percentage
Antifungal	Ketoconazole	26	7.12%
	Terbinafine	19	5.21%
	Sertaconazole Nitrate	16	4.38%
	Fluconazole	14	3.84%
	Luliconazole	7	1.92%
	Itraconazole	4	1.10%
	Clotrimazole	2	0.55%
Anti-histamines	Levocetirizine	32	8.77%
	Cetirizine	25	6.85%
	Ebastine	1	0.27%
Anti-bacterial	Clindamycin	18	4.93%
	Mupirocin	14	3.84%
	Doxycycline	10	2.74%

	Cefixime	3	0.82%
	Azithromycin	2	0.55%
	Fusidic acid & Mometasone Furoate	2	0.55%
	Amoxycillin, Clavulanic Acid	1	0.27%
	Silver sulfadiazine	1	0.27%
Corticosteroids	Desonide	20	5.48%
	Mometasone	12	3.29%
	Clobetasol	2	0.55%
	Betamethasone	1	0.27%
	Prednisolone	1	0.27%
	Hydrocortisone acetate, Crotamiton	1	0.27%

The subjects were categorized on the basis of prescribed drugs. The drugs which did not have an allopathic constituent were placed under a different category termed as miscellaneous. A total of 61 different medications have been used and the total number of drugs prescribed were 365 as shown in Table 5.

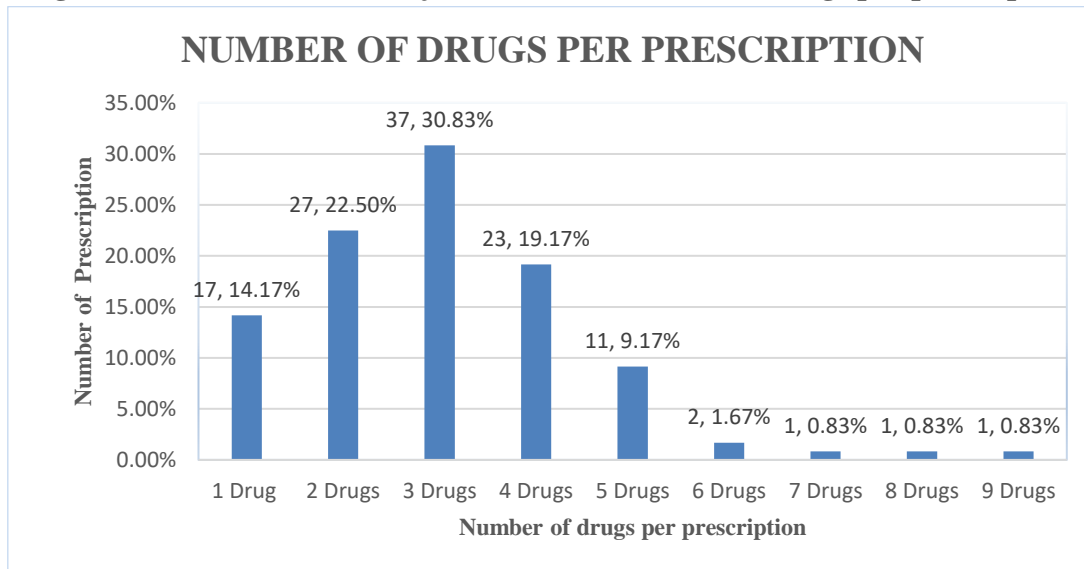
Table 5: Distribution of the subjects based on drugs prescribed

Sl. No.	Name of the Drugs	Frequency	Percentage
1	White soft Paraffin	32	8.77%
2	Ketoconazole	26	7.12%
3	Levocetirizine	26	7.12%
4	Cetirizine	25	6.85%
5	Desonide	20	5.48%
6	Terbinafine	19	5.21%
7	Clindamycin	18	4.93%
8	Sertaconazole	16	4.38%
9	Benzoyl Peroxide	14	3.84%
10	Fluconazole	14	3.84%
11	Mupirocin	14	3.84%
12	Urea, lactic acid, glycine	13	3.56%
13	Mometasone	12	3.29%
14	Doxycycline	10	2.74%
15	Adapalene, Clindamycin	8	2.19%
16	Permethrin	8	2.19%
17	Luliconazole	7	1.92%
18	Salicylic Acid	6	1.64%
19	Pantoprazole	5	1.37%
20	Calamine	4	1.10%
21	Isotretinoin	4	1.10%
22	Itraconazole	4	1.10%
23	Tacrolimus	4	1.10%

24	Cefixime	3	0.82%
25	Minoxidil	3	0.82%
26	Amino acids and vitamins	2	0.55%
27	Azithromycin	2	0.55%
28	Clobetasol Propionate	2	0.55%
29	Clotrimazole	2	0.55%
30	Fusidic acid & Mometasone Furoate	2	0.55%
31	Mikronutrient C Plus	2	0.55%
32	Montelukast Sodium, Levocetirizine	2	0.55%
33	Paracetamol	2	0.55%
34	Salicylic Acid and Ketoconazole	2	0.55%
35	Vitamin A	2	0.55%
36	Adapalene	1	0.27%
37	Albendazole	1	0.27%
38	All Dry Lotion	1	0.27%
39	Amoxicillin, Clavulanic Acid	1	0.27%
40	Azathioprine 50mg	1	0.27%
41	Betamethasone valerate	1	0.27%
42	Choline Salicylate	1	0.27%
43	Ebastine	1	0.27%
44	Hydrocortisone acetate, Crotamiton	1	0.27%
45	Iron Choline Citrate, Vit B1, Vit B2, Vit B3, Vit B6, Vit B12, Zinc Sulphate	1	0.27%
46	Ivermectin	1	0.27%
47	Kojic Acid Dipalmitate, Arbutin, Octinoxate, Vit E Acetate, Mulberry extract	1	0.27%
48	Methylcobalamin, Pregabalin	1	0.27%
49	Multivitamin	1	0.27%
50	Prednisolone	1	0.27%
51	Silver sulfadiazine	1	0.27%
52	Sirolimus	1	0.27%
53	Tretinoin	1	0.27%
54	Urea, Lactic acid, Propylene glycol, Liquid paraffin	1	0.27%
Miscellaneous			
1	Acnemoist cream 60gm	1	0.27%
2	Atogla Cream	1	0.27%
3	Dermadew Aloe cream	1	0.27%
4	Neo Glow Facewash	3	0.82%
5	Photosle Sun screen Gel SPF 40 -75gm	1	0.27%
6	Shadowz sunscreen SPF 30	4	1.10%

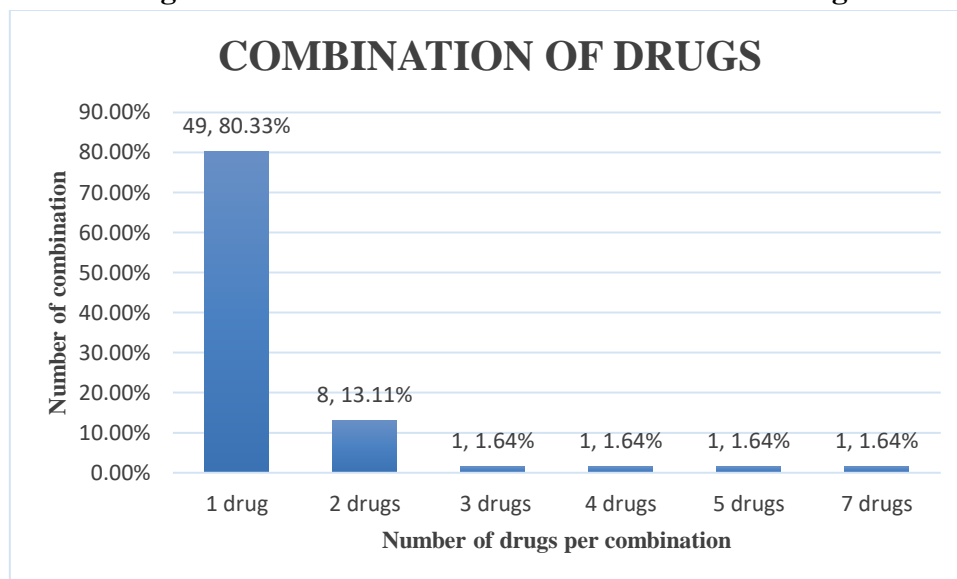
The study showed the distribution of the number of drugs per prescription, with the majority of prescriptions containing 3 drugs (30.83%, n=37), followed by 2 drugs (22.50%, n=27) and 4 drugs (19.17%, n=23). Prescriptions with 1 drug accounted for 14.17% (n=17), while 5-drug prescriptions made up 9.17% (n=11). Prescriptions with 6, 7, 8, or 9 drugs were less frequent, comprising 1.67% (n=2) and 0.83% (n=1) each as shown in Figure 3.

Figure 3: Distribution of Subjects based on number of drugs per prescription



Out of 61 drugs, 80.33% of the total drugs were having a single drug composition, (n=49), where the combination therapy is of 19.7% in which combination of 2 medications is 13.11%(n=8) and the combination of 3, 4, 5, 7 medications are 1.67% each (n=1) as shown in Figure 4.

Figure 4: Distribution based on combination of drug

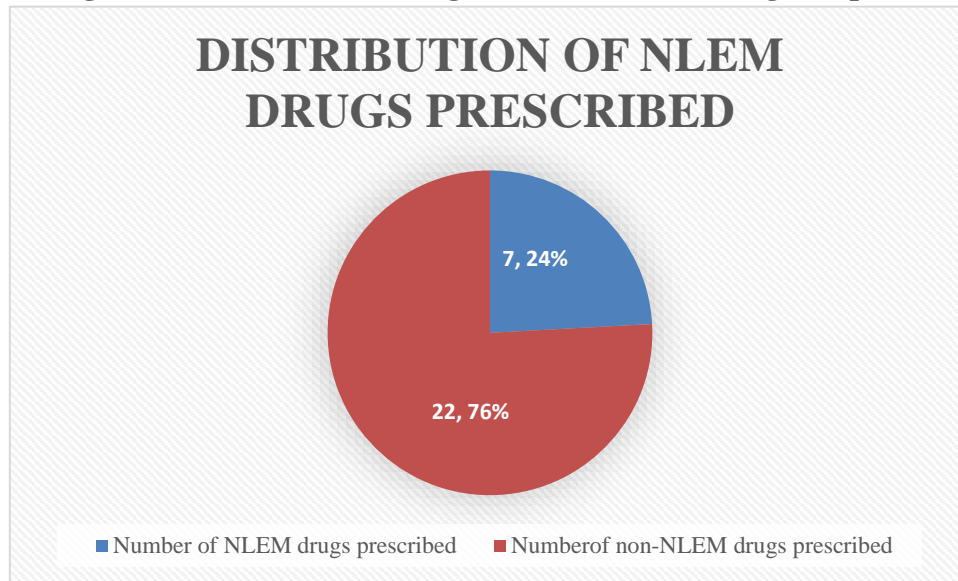


The drugs which were listed in NLEM 2022 were categorized as essential dermatological drugs (topical). A total of 12 drugs were listed in NLEM 2022, out of which only 7 topical drugs were found to be prescribed in the current study. Out of the total 36 topical drugs used in the department, 29 drugs were found to be not listed in NLEM-2022 as shown in Table 6 and Figure 5.

Table 6: Distribution of drugs based on NLEM drugs (Topical)

Name of NLEM drugs prescribed	Percentage of NLEM drugs prescribed	Name of non-NLEM drugs prescribed	Percentage of non-NLEM drugs prescribed
Benzoyl Peroxide	19.44%	Acnemoist	80.56%
Calamine		Adapalene, Clindamycin	
Clotrimazole		Adapalene	
Fusidic acid		All Dry Lotion	
Permethrin		Atogla	
Salicylic Acid		Clindamycin	
Silver sulfadiazine		Clobetasol Propionate	
		Dermadew Aloe cream	
		Desonide Cream	
		Hydrocortisone acetate , Crotamiton	
		Ketoconazole Lotion	
		Kojic Acid Dipalmitate, Arbutin, Octinoxate , Vit E acetate, Mulberry extract	
		Luliconazole	
		Minoxidil	
		Mometasone	
		Mupirocin	
		Neo Glow Facewash	
	Photostable Sun screen Gel SPF 40		
	Salicylic acid, Ketoconazole		
	Sertaconazole		
	Shadowz sunscreen SPF 30		
	Sirolimus		
	Tacrolimus		
	Terbinafine		
	Tretinoin		
	Urea, lactic acid, glycine		
	Urea 10%, Lactic acid 10%, Propylene glycol 10%, Liquid paraffin 10%		
	White soft Paraffin		
	Choline Salicylate		

Figure 6: Distribution of drugs based on NLEM drugs (Topical)



3. Discussion

The study included 120 subjects, predominantly adolescents (12–18 years), comprising 62.50% (n=75). The mean age was 12.02 years. The subjects were categorized into infants (0–12 months, 3.33%, n=4), toddlers (1–2 years, 5.83%, n=7), preschoolers (3–5 years, 5.83%, n=7), schoolchildren (6–<12 years, 22.5%, n=27), and adolescents (12–18 years, 62.50%, n=75). This contrasts with Emodi IJ et al. [2010], where younger age groups predominated. The findings align more with Isadora Z M et al., where adolescents were most affected (42%). The prevalence among adolescents may be attributed to hormonal changes during puberty, leading to conditions like acne. Males (54%, n=65) outnumbered females (46%, n=55), consistent with Surabhi Gupta et al. [2016], with a male-to-female ratio of 1:0.85. Males predominated across all age groups except schoolchildren. Single skin diseases were found in 87% of subjects, while 13% had multiple diseases, similar to Grover S et al. [2010], where 11% had multiple dermatoses. Non-infective conditions (46.67%) were the most common, followed by infective diseases (36.30%) and infestations (6.67%). Miscellaneous conditions of unknown cause accounted for 10.37%. Dermatitis (18.52%, n=25) was the most prevalent non-infective condition, followed by urticaria (4.44%, n=6), PMLE (2.96%, n=4), alopecia (2.22%, n=3), and vitiligo (2.22%, n=3). Among infective conditions, fungal infections were most frequent, with tinea cases (22.22%, n=30) dominating. Bacterial infections included acne (9.63%, n=3), impetigo (1.48%, n=2), and furuncle (0.74%, n=1). Viral infections comprised hand, foot, and mouth disease (2.22%, n=3), herpes zoster (0.74%, n=1), and warts (0.74%, n=1). Scabies accounted for all infestations (6.67%, n=6). Miscellaneous conditions included acne unspecified (7.41%, n=10), prurigo (0.74%, n=1), pyoderma (0.74%, n=1), sebaceous adenoma (0.74%, n=1), and stretch marks (0.74%, n=1). Compared to Grover S et al., where infections predominated, non-infective conditions were more common in this study. Tinea (22.22%) was the most common individual disease, followed by dermatitis (18.52%), acne (17.04%), scabies (6.67%), urticaria (4.44%), PMLE (2.96%), alopecia (2.22%), vitiligo (2.22%), and telogen effluvium (1.48%). Subtypes of tinea included tinea corporis (8.15%, n=11), tinea cruris (5.93%, n=8), tinea capitis (2.96%, n=4), pityriasis versicolor (2.96%, n=4), tinea (0.74%, n=1), tinea barbae (0.74%, n=1), and tinea manuum (0.74%, n=1). Tinea corporis was predominant, differing from Grover S et al., where tinea cruris (80%) was most common. Dermatitis types

included seborrheic dermatitis (5.19%, n=7), irritant contact dermatitis (2.96%, n=4), pityriasis alba (2.22%, n=3), atopic dermatitis (2.22%, n=3), allergic contact dermatitis (0.74%, n=1), atopic dermatitis unspecified (0.74%, n=1), contact dermatitis (0.74%, n=1), dyshidrosis (pompholyx) (0.74%, n=1), hypertrophic eczema (0.74%, n=1), and nummular eczema (0.74%, n=1). Acne subtypes included acne vulgaris, acne unspecified, comedones, and truncal acne, with acne vulgaris being the most common.

A total of 365 drugs were prescribed, 69% (n=251) topicals and 31% (n=114) oral. Topical formulations included creams (36.99%), lotions (12.05%), gels (9.59%), ointments (6.58%), face wash (2.19%), shampoos (0.82%), sprays (0.27%), and powders (0.27%). Oral forms comprised tablets (18.36%), capsules (8.77%), syrups (3.84%), and suspensions (0.27%). Compared to Gupta S et al., where topicals accounted for 51.2% and orals 47.8%, this study showed a higher preference for topicals. No parenteral routes were used, likely due to the pediatric population. Antifungals (24.1%, n=88) were the most prescribed, with fluconazole (3.84%, n=14) being the most common oral drug and ketoconazole (7.12%, n=26) the most common topical. Antihistamines (14.25%, n=52) were the second most prescribed, followed by antibiotics (13.97%, n=51), corticosteroids (10.14%, n=37), and moisturizing agents (9.59%, n=35). Unlike Gupta S et al., where terbinafine was the most prescribed antifungal, ketoconazole predominated in this study. Antibiotics (13.97%) were used orally and topically. Oral antibiotics included azithromycin, amoxicillin-clavulanic acid, and cefadroxil. Topical antibiotics like clindamycin were used for acne, along with mupirocin and fusidic acid. The average number of drugs per prescription was 3.04, lower than Pathak AK et al., who reported 5.13. Most prescriptions contained 4–5 drugs, with some requiring 1–2 drugs for milder diseases and others needing 6 or more for extensive conditions. Polypharmacy (≥ 4 drugs per prescription) was observed in 32.5% of cases, higher than Sharif S et al. but lower than Gupta S et al. Combination therapy accounted for 19.7% of drugs, with 80.33% being single-drug formulations. Of the combination therapies, 13.11% involved two drugs, while combinations of three, four, five, and seven drugs were 1.67% each. Combination therapy enhances adherence but risks discontinuation of all components if the single combination is stopped. Essential drugs listed in NLEM 2022 included benzoyl peroxide (n=14), permethrin (n=8), calamine (n=4), clotrimazole (n=2), silver sulfadiazine (n=1), and salicylic acid (n=1). However, 29 of 36 topical drugs used were not listed in NLEM 2022, reflecting similar findings by Soumya A et al. regarding gaps in hospital formulary adherence.

4. Conclusion

Our study has clearly defined the different types of skin diseases among the patients attending the Out-patient Department of Dermatology, ESIC MC- PGIMSR & Model Hospital, Rajajinagar, Bengaluru. The study represents a rough estimate of the incidence of skin disease in paediatric population of this area. The majority of the patients fall under the adolescent (12-18 years) category-62.50% and the incidence rate was more in the males (54%) than females (46%). We found that non-infective skin disease was more common, followed by infective disease and infestation.

The highest number of subjects included in the study belonged to the 12–18 age groups, hence it is the most vulnerable group. This can be due to hormonal changes occurred in the puberty. Demographic data indicates that males 54% (n=65) are more than females 46%(n=55). Comparing age-gender category, of all age groups, the number of male patients is more than females except in school age children, where females are slightly more than males.

Considering the category of disease, Non-infective (46.67%) diseases were more compared to Infective diseases (36.30%) and infestation (6.67%). Assessing the dermatological conditions, the most common

disease was found to be Tinea (22.22%) followed by Dermatitis (18.52%), Acne (17.04%), Scabies (6.67%), Urticaria (4.44%), PMLE (2.96) %, Alopecia (2.22%), Vitiligo (2.22%), Telogen effluvium (1.48%), Impetigo (1.48%).

The route of administration was only by oral and topical, in which topical drugs were prescribed more. Antifungals, 24.1% (n=88) were the most prescribed in the list of common categories of drugs prescribed, followed by Antihistamines and Antibiotics. Among oral antibiotics, azithromycin, amoxicillin-clavulanic acid and cefadroxil were used and in topical antibiotics, clindamycin & mupirocin were common. 19.5% of topical drug prescribed was listed on NLEM 2022 (topical).

It is understood that drug use in paediatrics should be performed with high risk caution as they are the most vulnerable group of population. The results highlight the significance of customized treatment strategies that consider the particular needs of pediatric patients. The results highlight the wide variety of drugs that are prescribed, which reflects how complicated pediatric skin disorders can be.

5. Materials and Methods

5.1. Study Protocol

This is an observational study and was carried out for a period of 6 months. The study was carried out in the Out-patient Department of Dermatology, ESIC MC - PGIMS, Rajajinagar, Bengaluru for 6 months. Using the formula, sample size was found to be 120 samples.

5.2. Exclusion criteria:

1. Subjects not willing to give consent
2. Subjects who cannot comprehend and answer the questions

5.3. Sample collection and preparation

A data collection form was designed to collect subject demographic aspects like age, gender, occupation, phone number, duration of disease, educational status and diagnosis.

5.4. Statistical analysis

All recorded data were entered and analyzed using MS Excel to determine statistical significance. Descriptive statistics were computed for quantitative variables, and frequencies and percentages were calculated for categorical values. Column charts, pie charts, and bar graphs were created to illustrate the nature of the data distribution.

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