

MAIN DERMATOLOGICAL DISEASES TREATED IN CHILDREN'S EMERGENCY ROOM: A SYSTEMATIC REVIEW

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Abstract: Skin changes are frequent reasons for pediatric emergency consultations, and it is essential that professionals are trained to identify and adequately treat these cases. This study carried out a systematic review of the literature to analyze the main dermatological diseases treated in different reference centers. Of the 8 articles selected for analysis, the most common disease groups covered were eczema, infections and urticaria/anaphylaxis, with emphasis on atopic dermatitis, viral and bacterial infections, and papular urticaria. The diagnostic agreement rate between pediatricians and dermatologists was low, ranging from 29% to 57%. Most diseases did not require hospitalization, with the few cases being more common in preschool children, due to two main entities, pharmacodermia and Staphylococcal Scalded Skin Syndrome. Adequate training of health professionals is emphasized as fundamental for the correct diagnosis, reduction of complementary exams, complications and unnecessary hospitalizations, contributing to a better quality of life for patients and reducing expenses in the health system.

Keywords: “Dermatology”, “Pediatrics”, “Emergencies”, “Child”, “Skin”.

INTRODUCTION

Skin changes are frequent reasons for consultations in pediatric emergencies. Generally, the first evaluation is not carried out by a dermatologist, but rather by a pediatrician or general practitioner. Pediatric emergency care related to skin changes represents a significant percentage of cases, ranging from 4% to 40% (SUN L. 2023). It is noteworthy that there are numerous diagnostic disagreements between pediatricians and dermatologists, reinforcing the hypothesis that it is necessary for the professional responsible for emergency care to be able to recognize and properly manage such cases.

This article aims, through a systematic review, to study the prevalence, type of dermatological conditions, demographic profile, need for hospitalization and diagnostic agreement of pediatric patients treated in Children's Emergency Room consultations, in several reference centers.

METHODOLOGY

This is an observational and descriptive study, carried out through a systematic review of the literature. In April 2023, a search was carried out in databases regarding the main dermatological diseases in Children's Emergency Rooms, over the last 10 years, in the population under 18 years of age. Using the Medline, PubMed and Lilacs databases, with the descriptors “Dermatology”, “Pediatrics”, “Emergency”, “Child” and “Skin”, and the Boolean operator “AND”, 127 articles were found. After reading the title, abstract and double-checking references, 26 studies were submitted to full reading. Of these, 8 met the inclusion and exclusion criteria and were selected to carry out the work. The inclusion criteria were: a) original articles; b) articles published in the last 10 years (2013 to 2023); c) no language restrictions; d) complete articles; e) population under 18 years f) articles related to the topic (main dermatological diseases in pediatric emergency). The exclusion criteria applied were: a) duplicate articles; b) articles with no relevance to the topic; c) articles that do not restrict children under 18 years of age; d) case reports and series; e) articles with less than 50 participants. Data analyzed included: age; sex; dermatological diagnosis; number of patients treated in the emergency department; type of study; study follow-up time; need for hospitalization; diagnostic agreement between pediatricians and dermatologists.

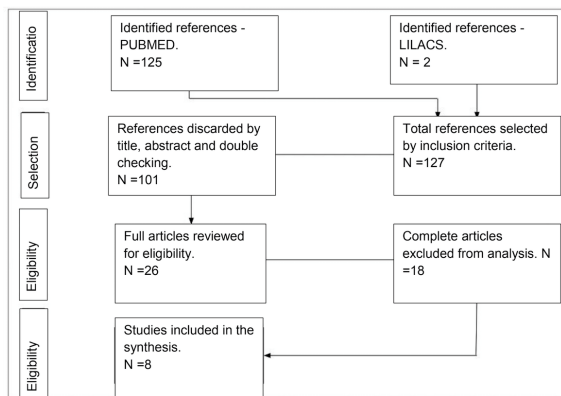


Figure 1. Flowchart of the selection of articles for the study: “Most Prevalent Dermatological Diseases in Pediatric Emergency Rooms”, 2023.

RESULTS

The retrospective study of *Sun L.*¹, carried out during 2019, with the aim of analyzing the diagnosis of dermatological emergency consultations, at the tertiary Hospital Santa Maria de Portugal, it reviewed the electronic medical records of 1256 patients, between 13 days of age and 17 years. There was a predominance of males and children between 0 and 2 years. The dermatological diagnosis, number of patients, average age and sex are shown in Table 1.

Of the 1256 patients, 504 were seen by a dermatologist and, later, by a pediatrician, in order to compare diagnostic agreement between specialties. The 10 most frequent diagnoses given by both specialties are described in Table 2. The study found that there was a 29% rate of diagnostic agreement between pediatricians and dermatologists.

Among the illnesses treated, most of them were not serious and did not threaten the patient’s life, and could be treated on an outpatient basis.

Diagnosis	Diagnosis: PED n (%)	Diagnosis: DEC n (%)
Scabies	78 (15.5)	58 (11.5)
Atopic dermatitis	58 (11.5)	72 (14.3)
Eczema	52 (10.3)	53 (10.5)
Molluscum contagiosum	37 (7.3)	35 (6.9)
Impetigo	33 (6.5)	27 (5.4)
Papular urticaria	28 (5.6)	32 (6.3)
Tinea corporis	25 (5.0)	12 (2.4)
Tinea capitis	25 (5.0)	28 (5.6)
Viral wart	17 (3.4)	19 (3.8)
Urticaria	12 (2.4)	4 (0.8)

Table 2: Comparison of the 10 most frequent diagnoses by pediatricians of the 504 children who received a specific diagnosis by dermatologists.

Source: ¹SUN L.2023.

Caption: PED: pediatric emergency department; DEC: dermatological emergency department.

A cross-sectional epidemiological study, lasting 3 years, of *Techasatian L.*² *et. al*, between 2016 and 2019, carried out by the University of Thailand, collected data from 40,683 patients (extracted from the Health Object Program), between the ages of 21 days and 18 years, who visited the pediatric emergency department of the University Hospital itself. Among the total number of consultations, 1,701 were cases related to dermatological conditions.

The objective of the study was to explore the prevalence, sociodemographic characteristics and dermatological diagnoses, which are described in Table 3.

Patient admission depended on evaluation by a pediatrician trained in dermatology or an experienced pediatrician.

The vast majority did not require hospital admission and were not considered urgent, with the main causes of hospitalization being Pharmacodermia, followed by Staphylococcal Scalded Skin Syndrome.

According to *Techasatian L.*² *et. al*, in Thailand and the United States, infections

Diagnosis	N (%)	Average of age (+- SD)	Male/ Female
1- Dermatitis	369 (27.3)	5.3 +- 5.2	172/197
Atopic Dermatitis	155 (11.5)	4.5 +- 4.9	81/74
Eczema (nonspecific)	136 (10.1)	6.0 +- 5.2	61/75
2- Viral infection	197 (14.6)	6.6 +- 4.9	108/89
Molluscum contagiosum	65 (4.8)	4.9 +- 3.7	34/31
Non-specific viral rash	42 (3.1)	4.5 +- 4.5	20/22
Viral wart	38 (2.8)	10.3 +- 5.5	23/15
3- Fungal infection	164 (12.1)	6.5 +- 5.0	89/75
Tinea capitis	81 (6.0)	4.9 +- 3.3	48/33
4- Infestation	163 (12.1)	5.9 +- 5.5	86/77
Scabies	158 (11.7)	5.8 +- 5.6	85/73
5- Bacterial infection	139 (10.3)	8.0 +- 6.0	73/66
Impetigo	100 (7.4)	6.4 +- 5.4	56/44
6- Insect bites and itching	92 (6.8)	6.2 +- 5.0	48/44
Papular urticaria	77 (5.7)	6.0 +- 4.8	42/35
7- Papulosquamous diseases	52 (3.8)	10.2 +- 4.7	18/34
Pityriasis rosé	31 (2.3)	10.4 +- 4.6	12/19
8- Hair, nail, mucous membrane and adnexal diseases	48 (3.6)	11.6 +- 4.9	24/24
9- Others	36 (2.7)	7.3 +- 5.9	18/18
10- Vascular diseases	16 (1.2)	8.9 +- 4.5	8/8
11- Skin neoplasms	13 (1.0)	12.2 +- 2.9	8/5
12- Related to the environment and physical agents	12 (0.9)	11.7 +- 4.8	5/7
13- Urticaria	11 (0.8)	6.2 +- 5.1	5/6
14- Pigmentation diseases	8 (0.6)	8.5 +- 4.4	3/5
15- Transient neonatal dermatitis	7 (0.5)	0.3 +- 0.8	3/4
16- Genodermatosis and genetic disease	6 (0.4)	11 +- 2.8	3/3
17- Sexually transmitted infections	5 (0.4)	16.6 +- 0.5	5/0
18- Erythema	3 (0.2)	7.3 +- 8.4	2/1
19- Vesicobullous disease	2 (0.1)	1.0 +- 0	1/1
20- Panniculitis	2 (0.1)	11.0 +- 2.8	1/1
21- Langerhans Cell Disorder and Macrophages	2 (0.1)	10.5 +- 2.1	1/1
22- Drug-induced dermatitis	2 (0.1)	6.0 +- 1.4	2/0
23- Rheumatological, metabolic and systemic diseases	2 (0.1)	8.5 +- 12.0	1/1
24- Pregnancy-related dermatitis	1 (0.1)	17	0/1

Table 1: The dermatological diagnoses of the 1,256 children treated at DEC, grouped into 24 groups of diseases, presented in descending order of relative frequency.

Source: ¹ SUN L.2023

Caption: PED: pediatric emergency department; DEC: dermatological emergency department.

lead the ranking of the most common dermatological disease, in contrast to France, where viral exanthema and atopic dermatitis predominate.

The main infectious disease diagnosed was infectious exanthema (22.9%), followed by specific viral infections (9.1%), such as Chickenpox, Herpes Zoster, Herpes Simplex, Hand-Foot-Mouth Syndrome and Mononucleosis. The second most common infections were bacterial infections (4.2%), which had the highest proportion of hospitalizations among infections, with staphylococcal Scalded Skin Syndrome standing out.

Finally, the researchers reinforce that the majority of cases were not urgent or emergent, but that the rare cases of hospitalization were due to allergic reactions to medications and Staphylococcal Scalded Skin Syndrome.

The cross-sectional study of Collier ³ *et.al*, conducted between 2009-2015, collected data from medical records from the National Hospital Ambulatory Medical Survey, which included all national hospitals in the United States.

The researchers selected all dermatological diagnoses using the ICD-9 classification. 20% of visits to the emergency department occurred in the pediatric population, 6.4% of which were due to dermatological cases, representing more than 1.95 million visits to the sector annually.

The study reinforces that the majority of cases were not urgent, as only 2.1% required in-hospital admission.

In sociodemographic characteristics, there was a distribution of 50.2% female and 49.8% male (gender ratio 1:1), most patients were 5 years old or younger (54.4%), and 48.1% were non-Hispanic white, followed by 25% non-Hispanic black and 23.5% Hispanic.

The 10 main dermatological diagnoses given by pediatricians in the emergency

department are shown in Table 4, where Cellulitis was the most identified condition (25.6%), followed by non-specific rash (13.3%) and contact dermatitis or eczematous (11.3%).

Diagnosis	Code: CID-9	Frequency (% ,95% CI)
Cellulitis	681.00-682.90	25.57 (23.3-27.9)
Non-vesicular rash	782.10	13.27 (11.4-15.2)
Contact dermatitis	692.00-692.90	11.27 (9.41-13.1)
Urticaria	708.00-708.90	8.62 (7.13-10.1)
Other viral rashes	057.00-057.90	4.50 (3.47-5.52)
Scabies/ pediculosis	132.00-133.90	3.80 (2.79-4.81)
Impetigo	035.00	3.49 (2.53-4.46)
Dermatophyte infection	110.00-111.90	3.49 (2.25-4.73)
Candidiasis (mucosa or skin)	112.00-112.30	3.38 (2.50-4.26)
Rash from diapers or wipes	691.00	2.89 (1.96-3.81)

Table 4: Top 10 dermatologic diagnoses given in emergency departments according to the National Hospital Ambulatory Medical Survey.

Source: ³ COLLIER, ERIN K. 2020

The prospective study of *Dei-Cas Ignacio⁴ et.al*, during 2016, carried out in the pediatric emergency department of Hospital Presidente Perón (Buenos Aires, Argentina), it included 2,475 patients under 15 years of age, who were treated only by pediatricians.

The primary objective of this study was to evaluate the incidence, characteristics, and severities of infectious skin diseases in the pediatric emergency department.

The study separated skin changes into infectious and non-infectious causes. Of all dermatological complaints, skin infections were the main reasons for pediatric emergency consultations, representing 67.9% (1680 patients).

Table 5 shows the diagnoses of children with skin infections in the pediatric emergency

Variables	Total (n=1701)	Eczematous diseases (n=478)	Urticaria/ Anaphylaxis (n=478)	Drug rash (n=64)	Infections (n=647)	Several items (n=49)
1- Gender						
Male	913 (53.7)	240 (51.8)	285 (59.6)	38 (59.4)	334 (51.6)	16 (32.6)
Female	788 (46.3)	223 (48.2)	193 (40.4)	26 (40.6)	313 (48.4)	33 (67.4)
2- Age (years)						
Average (IQR)	6 (2.3–12.1)	7.3 (3.2–13.3)	8.2 (3.4–14.6)	4.9 (1.7–11.3)	4.4 (1.8–8.4)	7.2 (2.1–14.7)
3- Age by group						
Infant (≤1 year)	211 (12.4)	49 (10.6)	48 (10.0)	9 (14.1)	95 (14.7)	10 (20.4)
Preschool age (1–6 years)	649 (38.2)	155 (33.5)	143 (29.9)	29 (45.3)	310 (47.9)	12 (24.5)
School age (7–12 years)	413 (24.2)	123 (26.6)	125 (26.2)	11 (17.2)	144 (22.3)	10 (20.4)
Teenager (13–18 years)	428 (25.2)	136 (29.4)	162 (33.9)	15 (23.4)	98 (15.2)	17 (34.7)
4- Hiring						
Yes	182 (10.7)	0 (0)	82 (17.2)	39 (60.9)	50 (7.7)	11 (22.4)
No	1519 (89.3)	463 (100.0)	396 (82.9)	25 (39.1)	597 (92.3)	38 (77.6)

Table 3: Demographic information of patients with dermatological conditions in five different diagnostic categories.

Source: ² TECHASATIAN L. 2021.

Diagnosis	Number	%	Average age	Sex ratio (Male/Female)
Infectious skin diseases	1680	100	4.4 (3.6)	1.05
Bacterium	932	55.5	4.9 (3.8)	1
Impetigo	377	22.4	4.2 (3.4)	0.9
Boil	242	14.4	5.5 (4.2)	1.1
Cellulite/Erysipelas	191	11.4	5.5 (4.1)	1.1
Scarlet fever	89	5.3	4.4 (2.1)	0.7
Abscess	33	2	6.5 (5.1)	0.6
Virus	604	35.9	3.8 (2.9)	1.2
Varicella	397	23.6	4.5 (2.7)	1.3
Non-specific viral rash	99	5.9	2.9 (3.1)	1
Sudden rash	50	3	0.9 (0.6)	0.8
Hand-foot-and-mouth disease	28	1.7	2.4 (1.7)	2.1
Herpetic gingivostomatitis/recurrence	9	0.5	5 (4.2)	2
Fifth disease (erythema infectiosum)	9	0.5	3 (2.1)	0.5
Zoster	6	0.3	5.8 (4.4)	1
Molluscum contagiosum	3	0.2	4.7 (3.5)	0.5
Wart	3	0.2	5.2 (2.2)	0.5
Fungus	33	2	4.2 (3.8)	0.9
Tinea capitis	10	0.6	7 (3.9)	1.5
Fungal diaper dermatitis	8	0.5	0.9 (1.1)	0.6
Dermatomycosis, tinea pedis	7	0.4	2.6 (1.8)	0.2
Onychomycosis	7	0.4	5.6 (4.1)	2.5
Oral candidiasis	1	0.1	0.1	1
Parasites	111	6.6	3.9 (3.6)	1.2
Scabies	109	6.5	3.8 (3.7)	1.3
Pediculosis	2	0.1	6.5 (0.7)	1

Table 5: Diagnoses of children with skin infections in the pediatric emergency department.

Source: ⁴ DEI-CAS, IGNACIO. 2018

Skin infections	<1 year (n = 272)	1-6 years (n = 891)	>6 years (n = 517)	All ages (n = 1,680)
1- Gender n (%)				
Male	139 (16.12)	465 (53.94)	258 (29.94)	862 (100)
Female	133 (16.26)	426 (52.08)	259 (31.66)	818 (100)
2- Etiology n (%)				
Bacterium	134 (14.38)	471 (50.74)	327 (35.09)*	932 (100)
Virus	100 (16.56)	355 (58.77)*	149 (24.67)	604 (100)
Fungus	10 (30.3) *	13 (39.4)	10 (30.3)	33 (100)
Parasites	28 (25.23)	52 (46.85)*	31 (27.93)	111 (100)

Table 6: Infectious skin diseases according to sex and etiology by age group.

* P < 0.05. Source: ⁴ DEI-CAS, IGNACIO. 2018

department of the aforementioned study.

Bacterial infections were observed in 55.5% of cases, followed by viral (35.9%), parasitic (6.6%) and fungal (2%). Although bacterial etiology is the most prevalent, the most common specific diagnosis was the varicella virus, with 397 cases. Furthermore, bacterial infections were prevalent at all ages, with preschoolers (Table 6) representing the highest frequency of infectious skin diseases (53.04%).

Regarding seasonality, the highest number of cases occurred during spring and summer, for viruses and bacteria, respectively. The researchers reinforced that the majority of cases were not urgent, with the main reason for hospitalization being bacterial infections.

The retrospective and descriptive study of *Baquero-Sánchez E.⁵ et. al* included 861 patients under 14 years of age (average of 4.5 years of age), seen between June 2010 and December 2013, by a pediatrician on duty, followed by evaluation by a dermatologist from the same service.

The majority of patients were seen in the months of October, April and May, and the most frequent age group was represented by preschoolers (31%).

The study separated skin conditions into 20 groups of diseases, but highlighted that eczema (27%) and infections (26%) were the main reasons for consultation. The

distribution of skin infections and eczema are shown in Graphs 1 and 2, respectively.

The main objective of this study was to analyze sociodemographic characteristics and the frequency of dermatological diagnoses, comparing diagnostic agreement between dermatologists and pediatricians.

The main specific dermatological diagnoses are described in Table 7.

The cases judged by the pediatricians on duty to be urgent were referred for urgent pediatric dermatological evaluation, in which diagnostic agreement was compared using the Kappa index, which was 0.206 (CI: 95%: 0.170-0.241), which translates to a value of 57%, reflecting little correlation.

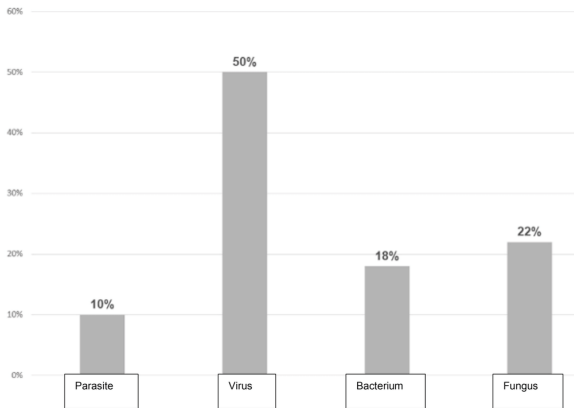
The study reinforces that the vast majority of cases treated in hospital emergency departments are not urgent.

Diagnosis	N (%)
Atopic dermatitis	142 (17)
Itching	45 (5)
Tinea	39 (5)
Pyogenic granuloma	35 (4)
Molluscum Contagiosum	34 (4)
Impetigo	33 (4)
Gianotti-Crosti syndrome	27 (3)
Seborrheic dermatitis	23 (3)
Scabies	22 (3)
Contact dermatitis	20 (2)
Bites	18 (2)
Urticaria	18 (2)
Pityriasis rosé	18 (2)

Infantile hemangioma	17 (2)
Psoriasis	15 (2)
Dyshidrotic eczema	14 (2)
Herpes zoster	13 (2)
Diaper dermatitis	12 (1)

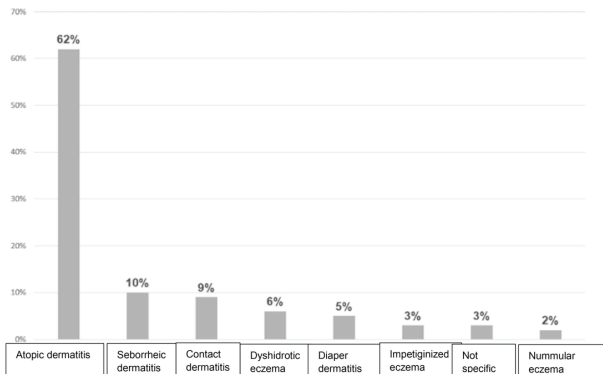
Table 7: Main diagnoses issued in emergencies in the general pediatric population

Source: ⁵ BACHERO- SÁNCHEZ E., 2015



Graph 1: Distribution of cutaneous and mucous infections.

Source: ⁵ BACHERO- SÁNCHEZ E., 2015



Graph 2: Distribution of eczema.

Source: ⁵ BACHERO- SÁNCHEZ E., 2015

The retrospective study of Moon AT. ⁶ *et al*, carried out over 3 years, it included 347 patients, aged between 3 days and 18 years, treated in the pediatric emergency department of the Children's Hospital of Philadelphia (USA).

The objective of the study was to evaluate the profile of pediatric dermatology

consultations in the hospital's emergency department. The most common diagnoses were atopic dermatitis, infectious diseases and inflammatory skin conditions. The age group distribution is shown in Table 8.

The main etiological diagnosis was atopic dermatitis, with secondary infections being present in more than half of the cases. Of the infectious diseases, 50.1% were due to viral etiology (herpes simplex, herpes zoster, hand-foot-and-mouth disease, parvovirus and molluscum contagiosum), 32.1% due to bacteria (Impetigo and Scalded Skin Syndrome caused by *Staphylococcus aureus*) and 9.9% by fungi (superficial infections by dermatophytes).

Among the main inflammatory skin diseases, the following were observed: urticaria multiforme, pityriasis rosea, guttate psoriasis, Lipschutz ulcer, Gianotti's ulcer - Crosti's disease, erythema multiforme, Kawasaki disease and acute hemorrhagic edema of childhood.

The study reveals that there was a seasonal predilection in the warmer seasons, with 105 cases seen in spring and 94 in summer, compared to 76 consultations in autumn and 72 in winter.

Finally, the diagnostic agreement rate between pediatricians and dermatologists was 57%, and Table 9 compares these diagnoses.

Age	Number of queries (%)
0-28 days	21 (6.1)
1-23 months	87 (25.2)
2-5 years	82 (23.6)
6-9 years	56 (16.1)
10-13 years	50 (14.4)
14-18 years	51 (14.6)

Table 8: Pediatric emergency department visits by age

Source: ⁶ MOON AT., 2016

Diagnosis	Number of queries (%)
Infectious disease [total*]	136 (39.2)
Infectious disease alone	81 (23.3)
Inflammatory skin condition (not including atopic dermatitis)	56 (16.1)
Atopic dermatitis	50 (14.4)
Several items	41 (11.8)
Dermatitis (not including atopic dermatitis)	32 (9.2)
Drug rash	27 (7.8)
Infestation	23 (6.6)
Urticaria	13 (3.7)
infantile hemangioma	9 (2.6)
Stevens-Johnson syndrome/ Toxic epidermal necrolysis	4 (1.2)
Inconclusive	20 (5.8)

Table 9: Comparison between the diagnosis given by the pediatric emergency service and that of dermatology.

Source: ⁶ MOON AT., 2016

The prospective study carried out by *Alba-Rojas⁷ et. Al* included 185 patients with dermatological complaints, under 18 years of age (average of 3.8 years), treated in the emergency room of a Tertiary Hospital in Mexico, between 2017 and 2018.

The objective of the study was to determine diagnostic agreement between emergency physicians and pediatric dermatologists in order to identify the main skin conditions in the referred population.

The main conditions found were: inflammatory skin diseases (45%), infections (34%), disorders caused by external agents (7%), allergic reactions to medications (3%), vascular anomalies (2%), and other conditions (9%).

Among the diagnoses carried out in the dermatology department, the main dermatological diseases were viral infections, followed by urticaria, atopic dermatitis and contact dermatitis. (Table 10). The study states that the majority of consultations were not urgent cases, with only 5% of patients being

hospitalized.

The most common viral infections were: nonspecific viral exanthema (17%); warts (17%); chickenpox (17%); Gianotti-Crosti syndrome (12%); hand foot and mouth disease (10%); molluscum contagiosum (10%); herpes simplex (10%); herpes zoster (5%); erythema infectiosum (5%).

Considering diagnostic agreement, a higher rate was found between infectious skin diseases (57%) and conditions caused by an external agent (61.5%). Although infectious dermatoses rank second among the most common, errors occurred in the diagnosis of 43% of patients. Those with the lowest agreement rate were autoimmune diseases (33.3%) and skin drug reactions (28.5%).

The study of *Andina-Martinez⁸ et al.* aimed to describe the mucocutaneous involvement of children hospitalized by Coronavirus 19 (COVID-19), admitted to the pediatric institution in Madrid (Spain). A study was carried out on a series of 50 children between zero and 18 years old hospitalized with COVID-19 between March 1, 2020 and November 30, 2020. 44 patients (88%) were diagnosed using RT-PCR (rapid test-protein C reatin) and, 6 patients, (12%) through serological testing.

Mucocutaneous manifestations were present in 21 patients. The main ones were: macular and/or papular rash (18 patients); conjunctival hyperemia (17 patients); chapped red lips or strawberry tongue (9 patients).

A total of 18 patients met criteria for multisystem inflammatory syndrome in children. Patients with mucocutaneous involvement tend to be older and arrive at the emergency room with a drop in general condition, tachycardia, elevated levels of C-reactive protein and D-dimer, in addition to lymphopenia. Therefore, mucocutaneous manifestations represented a greater risk of admission to a pediatric intensive care unit.

Diagnosis	Frequency (%) n =185
Inflammatory skin diseases	83/185 (45%)
Urticaria	22
Atopic dermatitis	21
Contact dermatitis	15
Diaper dermatitis	5
Seborrheic dermatitis	5
Panniculitis/ erythema nodosum	4
Pityriasis rosea	4
Erythema multiforme	3
Pityriasis lichenoids	2
Psoriasis	1
Perioral dermatitis	1
Infectious diseases	63/185 (34%)
Viral	42
Bacterian	14
Parasite	4
Fungus	2
Mycobacterial	1
It does not specify	1
External agent	13/185 (7%)
Reaction to insect bite	12
Phytophotodermatitis	1
Others	8/185 (4%)
Cysts	3
Tumors and Neoplasms	2
Graft-versus-host disease	1
Gray dermatosis	1
Onychocryptosis	1
Drug reaction	7/185 (3%)
Rash	3
Drug reaction with eosinophilia and symptoms (DRESS)	1
Stevens-Johnson/toxic epidermal syndrome necrolysis (SSJ/NET)	1
Acneiform	1
Nonspecific	1
Vascular anomalies	3/185 (2%)
Tumors (infantile and pyogenic hemangioma granuloma)	2
Malformations	1
Newborn skin disorders	3/185 (2%)
Neonatal erythema toxicum	2
Miliaria	1
Autoimmune diseases	3/185 (2%)
Henoch-Schönlein purpura	1
Lupus erythematosus	1
Pemphigus foliaceus	1
Genodermatoses	2/185 (1%)
Epidermolysis bullosa	1
Neurofibromatosis type 1	1

Table 10: Diagnostics carried out in the dermatology department.

Source: ⁷ ALBA-ROJAS EL., 2020

Article number	Main author	Year of Publication	Kind of study	Main diagnoses	Most common specific diagnoses
1	Lanyu Sun	2023	Retrospective	Dermatitis, viral and fungal infections	Scabies, atopic dermatitis, eczema (nonspecific)
2	Leelawadee Techasatian	2021	Transversal	Infections, urticaria/ anaphylaxis and eczematous diseases	Infectious rash, urticaria and non-atopic dermatitis
3	Erin K Collier	2020	Transversal	-	Cellulitis, non-specific rash and contact dermatitis
4	Ignacio Dei-Cas	2018	Prospective	Bacterial, viral and fungal infections	Impetigo, boil and chickenpox
5	Elena Baquero-Sánchez	2015	Retrospective description	Eczema, infections and prurigo	Atopic dermatitis, simple acute prurigo and ringworm
6	Amanda T. Moon	2016	Retrospective	Infections, inflammatory skin disorders and dermatitis	Infectious disease, atopic dermatitis and non-atopic dermatitis
7	Erika L. Alba-Rojas	2020	Prospective	Inflammatory diseases, infections and those caused by external agents	Urticaria, atopic dermatitis and contact dermatitis
8	David Andina-Martinez	2021	Analytical description	Covid19	Rash, conjunctival hyperemia without secretion, strawberry tongue

Table 11: Summary of results found in all studies.

Within the scenario of the SARS-COV 2 pandemic, the presence of any mucocutaneous lesion in febrile children must lead to investigation of COVID-19.

In order to better understand all the results presented, it was decided to systematize them in a single table (Table 11) for a better understanding of the study.

DISCUSSION

The studies analyzed dermatological care in pediatric emergencies, focusing on prevalence, dermatological diagnosis and agreement between pediatricians and dermatologists.

Most cases were not urgent and did not threaten the lives of patients.

The cases that progressed to hospitalization were mainly secondary to Pharmacodermias and Staphylococcal Scalded Skin Syndrome. Due to their mortality potential, immediate recognition and treatments were of paramount importance. Therefore, doctors must look for specific skin signs of these conditions in order to avoid misdiagnosis and serious developments.

Techasatian L.² et. al, reinforces the idea that accurate diagnosis is vital to avoid serious complications, as well as the study carried out by *Collier³ et.al*, where it highlights the importance of improving access to outpatient dermatological care and training health professionals to reduce overload in pediatric emergency rooms.

Besides, *Techasatian L.² et. Al* states that dermatological emergencies must not be underestimated, despite the majority of patients with skin conditions not being urgent. Since pediatric patients who present with cutaneous manifestations are at increased risk of hospital admission, physicians must be prepared to adequately manage them.

In the study carried out by *Dei-Cas Ignacio⁴ et.al*, the author highlights that the majority of cases are not urgent and indicates that adequate training of doctors is necessary so that they can order the tests that are really necessary and avoid unnecessary hospitalizations. The article highlights that, although truly urgent cases represent very few visits, they can be fatal if they are underdiagnosed or misdiagnosed.

In the study of *Baquero-Sánchez E.⁵ et. al.*, the author describes that, as in other articles, the majority of dermatological cases treated were not considered urgent.

The study of *Sun L.¹ et al.*, revealed a 29% rate of diagnostic agreement between the pediatrics and dermatology sectors, indicating the importance of dermatological evaluation in pediatric emergencies. In the study by *Moon AT.⁶ et. al.*, the agreement rate between these two professionals was 57%, which, although higher, also denotes a low agreement rate between specialties. These data reinforce the importance of professional training in skin changes for the correct management of patients.

Regarding the gender of the patients, a balance was seen between the female and male population (1:1).

In relation to age group, even though the distribution between other groups was homogeneous, there was a slight predominance of preschoolers.

The chances of hospitalization decreased at a rate of 4% with each additional year of patient age. Therefore, the younger the age, the greater the chance of hospitalization. (*Techasatian L.² et. al.*)

The main diagnoses found were dermatitis, viral infections, fungal infections and infestations. Among the conditions involving dermatitis, the most common was atopic dermatitis. Regarding the etiologies of infections, there was a certain discrepancy between the articles, as some found a predominance of viral etiologies and others, bacterial etiologies. This is relevant due to seasonality, in which at certain times of the year and in certain regions, there is a predisposition to infections due to different etiological agents.

In the study carried out by *Andina-Martinez⁸ et al.*, in the not-so-distant scenario that the world population experienced

between 2020 and 2022, mucocutaneous manifestations in children hospitalized for COVID-19 have become extremely important for the diagnosis, prognosis and management of these patients. They were associated with a higher risk of admission to a pediatric intensive care unit. The researchers reinforce that in the scenario of the SARS-CoV-2 pandemic, the presence of any mucocutaneous lesion in febrile children must raise the suspicion of COVID-19. Furthermore, the presence of these same manifestations, especially regarding multisystem inflammatory syndrome, can be important indicators of severity and alert to the need for greater medical surveillance in patients who present these symptoms.

Therefore, *Dei-Cas Ignacio⁴ et. al.* is accepted that the appropriate management of these pediatric dermatological patients is essential to avoid the occurrence of underdiagnosis or erroneous diagnoses, which must be carried out through mutual cooperation between pediatric and dermatological doctors. Despite this, several limitations could be found, such as study design, variation according to the location of the country, seasonality, divergences between professionals (dermatologists and pediatricians) and the lack of complete information about some patients.

CONCLUSION

The present work highlights the relevance of pediatric dermatology in emergencies and the need for strategies to optimize the care and management of these patients.

Studies carried out in different countries show that the majority of these cases are not urgent and do not pose a threat to patients' lives, and can be treated on an outpatient basis. However, it is important to highlight that serious cases can occur, requiring immediate recognition and treatment to avoid serious or fatal complications.

Collaboration between pediatricians and

dermatologists is crucial for an accurate diagnosis and efficient treatment, which results in high resolution rates and a reduction in the need for additional exams. It is believed that the main reasons for these cases to be treated in emergency departments are distrust of primary care, lack of knowledge of certain specialties and the waiting time for an outpatient appointment.

Adequate training of healthcare professionals is essential to improve the management of skin conditions in pediatric emergencies and avoid diagnostic errors. Furthermore, strategies that promote better access to outpatient dermatological care can reduce the burden on emergency services.

In relation to the context of the COVID-19 pandemic, mucocutaneous manifestations in children hospitalized with the disease have gained importance for diagnosis and prognosis. Mucocutaneous manifestations have been associated with an increased risk of admission to pediatric intensive care units, and the presence of any mucocutaneous lesion in febrile children must raise suspicion of COVID-19. In the pandemic scenario, it is crucial that health professionals are aware of these manifestations to identify cases of COVID-19 infection in children.

Many pediatric patients treated in the emergency room are not seen by a dermatologist and, therefore, may not receive a specific diagnosis from these professionals, which may compromise the clinical follow-up of these patients.

However, it was noted that collaboration between pediatricians and dermatologists is essential for the success of the treatment, resulting in a high-resolution capacity and a reduction in the request for complementary exams, as well as a significant increase in the number of direct discharges.

Furthermore, the results of this article contribute to a better understanding of dermatological demands in pediatric emergency services and reinforce the importance of strategies to systematize and improve care, such as carrying out epidemiological studies, adequate dermatological training for pediatricians and the establishment of more effective screening protocols.

In the end, it is understood that the studies analyzed highlight the importance of an accurate diagnosis and adequate management of dermatological conditions in pediatric patients treated in emergencies, in addition to improving the training of health professionals to care for dermatological conditions, in order to promote adequate collaboration between professionals and implement strategies that optimize access to outpatient care, as these measures are essential to ensure effective and comprehensive treatment of skin conditions in children, improving their health and well-being.

Most cases are not urgent, but serious cases, such as pharmacodermia and Staphylococcal Scalded Skin Syndrome, require immediate recognition and treatment to avoid serious complications. Diagnostic agreement between pediatricians and dermatologists is still low, emphasizing the need for professional training in this area.

THANKS

This study was only possible to complete thanks to the commitment and commitment of our illustrious supervisor Amanda Bertazzoli Diogo, who proposed to help us and serve as a true mentor in every step of this incredible project. We would like to express our most sincere thanks for your collaboration and teaching throughout this journey.

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