

# Dermatological consultations at a pediatric emergency center

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## ABSTRACT

**Introduction.** Dermatological consultations account for between 4.1% and 19.9% of all consultations at the pediatric emergency center (PEC). The most frequently observed diagnoses are skin and soft tissue infections, dermatitis, viral infections, and adverse drug reactions. No local publications on the subject were found; therefore, the objectives of this study were to estimate the frequency of dermatological consultations at the PEC, describe the most common diagnoses, and evaluate the number of consultations by season.

**Population and methods.** A retrospective, descriptive, observational study was conducted in the dermatology outpatient clinic of a university hospital. The sample consisted of all dermatology outpatient visits by patients under the age of 18 seen between September 2017 and September 2019.

**Results.** A total of 129 592 visits were recorded, of which 10.6% ( $n = 13\,790$ ) were for dermatological conditions. These visits involved 9146 patients; 2890 (31.6%) had two or more visits. The mean age was 5.94 years, with a slight predominance of males (53%). The most common diagnoses were bacterial infections (19.2%) and viral infections (18.9%). A higher frequency of dermatological visits was observed during the warmer months ( $p = 0.026$ ).

**Conclusion.** Dermatology consultations accounted for 1 in 10 consultations at the PEC and were more prevalent during the warmer months. Bacterial and viral conditions were the most commonly observed.

**Keywords:** skin diseases; pediatrics; dermatology; emergency room visits.

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## INTRODUCTION

Pediatric emergency departments are typically where patients go for dermatological consultations, due to caregivers' concerns about symptoms, potential contagiousness, lack of improvement, or the inability to participate in their usual activities. This leads to visits to the pediatric emergency center (PEC), a 24/7 care facility staffed by pediatricians trained primarily in emergency care. It is estimated that dermatological visits to the pediatric emergency department account for between 4.1%<sup>1</sup> and 19.9%<sup>2</sup> of all visits.

The most frequently reported diagnoses in the literature vary across studies. Among the most commonly cited were skin and soft tissue infections, dermatitis (predominantly atopic), viral infections, and adverse drug reactions.<sup>1,3-9</sup>

Regarding the severity of the clinical presentation, some studies concluded that only a small percentage of these visits constituted true emergencies, with figures ranging from 2% to 30% of the total.<sup>10,11</sup> Furthermore, it was estimated that between 1% and 11.5% of patients required hospitalization.<sup>1-5,7,8</sup>

Seasonal variations were also noted, with a higher frequency of visits during the summer, attributed to increased time spent outdoors and the wearing of less protective clothing.<sup>12</sup>

Several studies analyzed the correlation between the diagnosis made by the on-call pediatrician and that of the pediatric dermatologist, finding agreement in approximately 60% of cases.<sup>3,8,13</sup> As for the treatments prescribed by the pediatrician, it was estimated that about 30% were modified by the specialist.<sup>10</sup>

In this context, understanding the epidemiology of the skin conditions that lead to visits to the PEC can be a valuable tool for providing higher-quality care.

The hospital where this study was conducted is located in the town of La Matanza, Buenos Aires, and is one of the busiest facilities in the area, serving both insured patients and private patients from various health insurance plans and private healthcare providers. As it is a teaching hospital, identifying the dermatological conditions treated at the PEC, both urgent and non-urgent, is significant for medical education and the expansion of community services.

Since no national publications were found describing dermatology consultations at a primary care center, the objective of this study was to estimate the frequency of these consultations,

describe the most common dermatological diagnoses, and assess the number of consultations by season.

## POPULATION AND METHODS

### Design

This was a retrospective, descriptive, observational study conducted at the Pediatric Emergency Department of the Hospital Italiano de Buenos Aires, San Justo campus, in Buenos Aires, Argentina. It is a high-complexity teaching hospital located in an urban area.

### Population

The sample consisted of all dermatology consultations for patients under the age of 18 treated at the PEC between September 2017 and September 2019.

**Inclusion criteria:** Patients of both sexes, aged 0 to 17 years, 11 months, and 29 days, who visited the Dermatology Clinic for an initial consultation or a discharge diagnosis.

**Variables:** Age, sex, reason for visit, discharge diagnosis, length of stay, and month of the year. The seasonality variable was operationalized as warm months (September through February) and cold months (March through August).

### Ethical considerations

The data were used in an anonymized form, respecting patient confidentiality, with access restricted to authorized personnel, in accordance with current legal regulations. The study was approved by the institution's Ethics and Protocol Committee (No. 5984, San Justo, April 8, 2021).

### Sample size<sup>14,15</sup>

This retrospective observational study was conducted using a fixed sample. The Department of Information Technology was asked to provide a list of visits that included a dermatological symptom, sign, or diagnosis at admission or discharge.

### Data collection

For data retrieval, a database of dermatological terms was created, as none existed at the start of the study. All admissions to the PEC during the study period were analyzed, and those that included dermatological terms as the reason for consultation or discharge diagnosis were selected. The diagnoses were obtained exactly

as they were recorded in the clinical records of the electronic medical record.

### STATISTICAL ANALYSIS

Categorical variables were described as absolute numbers and frequencies. Quantitative variables were expressed as the mean and standard deviation or the median and interquartile range, depending on their distribution. For comparing continuous variables, we used the Student's t-test or the Wilcoxon test, depending on the variable's distribution.<sup>14,15</sup> A *p*-value of <0.05 was considered statistically significant. The analysis was performed using the R statistical package (R Core Team, Vienna, Austria).

### RESULTS

Between September 2017 and September 2019, 129 592 visits to the PEC were recorded, of which 10.6% (*n* = 13 790) were for dermatological conditions (*Figure 1*).

These visits involved 9146 patients; 2890 (31.6%) had two or more visits. The variables age, sex, discharge admission status, and month of visit are summarized in *Table 1*.

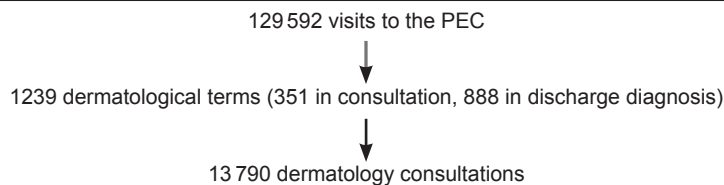
The mean age was 5.94 years. There was a slight predominance of males (53%), with a male-to-female ratio of 1.12:1.

Only 0.6% (*n* = 81) of the consultations about dermatological conditions resulted in hospital admission. Fifty-six percent of these admissions (*n* = 46) were due to skin and soft tissue infections, including cellulitis, abscesses, and boils.

Regarding seasonality, a higher frequency of visits was observed during the warmer months; November had the highest visit rate (11.6%). The median (25th–75th percentile) was 1014 (884.2–1049.2) visits during the cold months and 1292 (1174–1427) during the warm months (*p* = 0.026) (*Figure 2*).

For the analysis of the most common

**FIGURE 1. Flowchart consultations**



PEC: pediatric emergency center.

**TABLE 1. Patient characteristics, seasonality, and clinical course of dermatology-related visits to the pediatric emergency center**

Age (mean, SD)		5.9 years	4.8
Sex (n, %)	Female	6477	47
	Male	7313	53
Course (n, %)	Hospitalization	81	0.6
	Discharge	13 616	98.7
	Other	93	0.7
Month of the year (n, %)	January	1229	8.9
	February	1015	7.4
	March	1047	7.6
	April	1208	8.8
	May	1050	7.6
	June	844	6.1
	July	852	6.2
	August	982	7.1
	September	1155	8.4
	October	1354	9.8
	November	1603	11.6
	December	1451	10.5

SD: standard deviation.

diagnoses, only visits with a discharge diagnosis recorded by the on-call pediatrician were included; this occurred in 11 668 visits (84.6%).

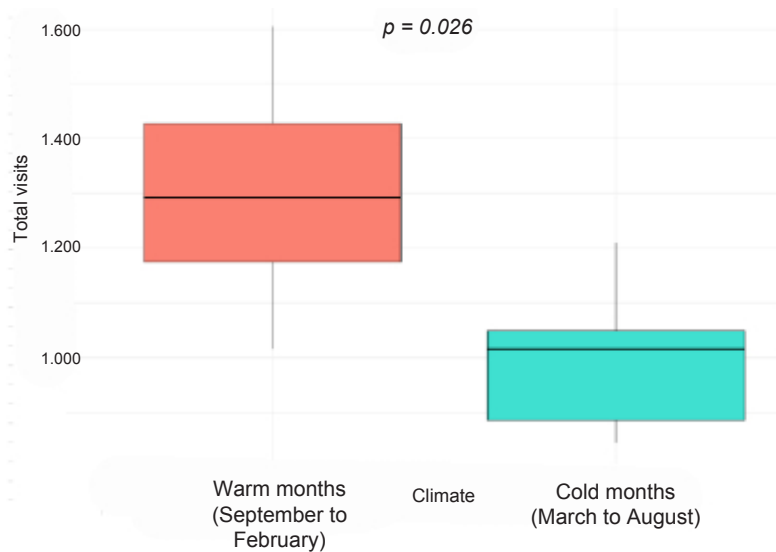
The main diagnoses were bacterial infections (19.2%; cellulitis, impetigo, skin and soft tissue infections, scarlet fever, furunculosis, and abscesses), viral infections (18.9%; chickenpox, hand-foot-and-mouth disease, viral exanthema, and sudden postfebrile exanthema), skin rash

(14.2%), allergic reactions (12.4%; including atopy and allergic dermatitis), urticaria (7.3%), insect bites (6.5%), and dermatitis (6.3%) (*Table 2*). Other less common diagnoses are detailed in *Table 3*.

## DISCUSSION

This study revealed a high prevalence of dermatological consultations across a wide

**FIGURE 2. Distribution of total dermatology visits by season**



**TABLE 2. Most common diagnoses in dermatology consultations at the pediatric emergency center**

Diagnosis	n	%
Bacterial infections	2247	19.2
Cellulitis	539	4.6
Impetigo	511	4.4
Skin and soft tissue infection	449	3.8
Scarlet fever	341	2.9
Furunculosis	297	2.5
Abscess	110	0.9
Viral infections	2206	18.9
Varicella	639	5.4
Hand-foot-and-mouth disease	570	4.8
Viral rash	522	4.4
Sudden post-febrile rash	295	2.5
Fifth disease	109	0.9
Herpetic lesions	51	0.4
Febrile rash	20	0.2
Skin rash	1660	14.2
Atopy/allergic reaction/allergic dermatitis	1449	12.4
Urticaria	861	7.3
Insect bites	761	6.5
Dermatitis/eczema (non-allergic)	736	6.3
Prurigo	295	2.5
Balanitis/balanoposthitis	255	2.18

clinical spectrum in the pediatric emergency department of a high-complexity urban hospital.

Dermatology consultations accounted for approximately one-tenth of all consultations at the pediatric emergency department, consistent with previous studies that reported rates ranging from 4.1% to 19.9%.<sup>1,2,5,7</sup> These prevalences likely varied according to institutional characteristics, the volume of patients seen, and the complexity of the care provided. At the hospital analyzed, there was no walk-in pediatric dermatology clinic, and 24-hour on-call care was available—factors that may have contributed to the use of the pediatric emergency department for these conditions. In addition, a seasonal variation was observed in dermatology visit prevalence, with more visits during the warmer months than during the colder months. This finding was consistent with reports from other authors.<sup>12,13</sup> The varying durations of the periods analyzed across studies could influence the reported prevalence rates.

Although nearly one-third of the patients had two or more follow-up visits, the study period was two years, so it was not possible to determine whether these visits were related to the same episode or to different conditions. Consequently, it was not possible to estimate the proportion of follow-up visits due to unresolved conditions or recurrences.

Consistent with previous studies, a wide range

of dermatological diagnoses was identified, with a predominance of bacterial and viral infections, followed by skin rash as a nonspecific diagnosis and allergic reactions. Other studies reported a higher prevalence of inflammatory skin conditions, including eczema, as one of the most common diagnoses.<sup>3-5</sup>

The available information on the need for hospitalization for dermatological conditions seen at the PEC is limited and yields variable results. In this analysis, the hospitalization rate was low (less than 1%), whereas rates reported in other studies ranged from 1% to 11.5%.<sup>1-5,7,8</sup> These differences could be attributed to socioeconomic variations and differences in access to the healthcare system across the study populations.

The study's limitations include its retrospective design, which carries a risk of reporting bias due to incomplete records or diagnostic overlap. Furthermore, comparisons with other studies may have been affected by differences in diagnostic criteria. PEC pediatricians recorded diagnoses, and their diagnostic accuracy was not evaluated, particularly for rare dermatological conditions. Previous studies have demonstrated moderate agreement between diagnoses made by pediatricians and pediatric dermatologists (58–64.2%),<sup>3,8,13</sup> highlighting the importance of interdisciplinary collaboration and strengthening dermatology training during pediatric residency.

**TABLE 3. Other less common diagnoses in dermatology consultations at the Pediatric Emergency Center**

Diagnosis	n	%
Perionychia	199	1.7
Skin lesion	159	1.4
Fungal infections	120	1
Scabies	113	1
Erythema	83	0.7
Heat rash	59	0.5
Pruritus	51	0.4
Warts	51	0.4
<i>Molluscum contagiosum</i>	42	0.4
Gilbert's pityriasis rosea	38	0.3
Onychomycosis and onychocryptosis	33	0.3
Dyshidrosis	33	0.3
Blisters	26	0.2
Folliculitis	24	0.2
Acne	20	0.2
Skin macules/spots	16	0.1
Pediculosis	15	0.1
Dry skin/xeroderma	13	0.1
Others	103	0.9

## CONCLUSION

This study revealed a significant number of dermatology-related visits to the PEC, accounting for 1 in 10 visits, with a higher prevalence during the warmer months.

These consultations were due to a wide range of skin conditions, with bacterial and viral infections being the most common. ■

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