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# Common skin disorders in children: a comparative review across family practices, emergency departments and outpatient clinics in Europe

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## ABSTRACT

Skin disorders are a growing concern in the paediatric population. This study reviewed original articles conducted in family practices, emergency departments and outpatient clinics from the last 20 years in Europe to determine the most prevalent skin diseases in children. Due to the limited number of such studies, 6 original studies (131,810 patients) were included in the review. Results varied by location: in family paediatrician offices the most common diagnosis was atopic dermatitis, emergency departments recorded more frequent visits of children with acute skin disorders, in dermatology outpatient clinics showed a high prevalence of viral infections and acne vulgaris in older children. The study showed that the most common skin diseases varied by the time of year and the age of the children, highlighting the need for additional research stratified by age and season on large European cohorts.

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**Keywords:** dermatology, paediatrics, skin diseases, epidemiology, paediatric dermatology

## INTRODUCTION

There has been considerable growth in the number of skin disorders diagnoses in Europe over the past two decades [1]. Due to a big population-based study, it can be estimated that over 94 million Europeans experience discomfort due to skin sensations such as itching, burning, or dryness [2]. Skin conditions are a frequent cause for children to attend paediatric clinics and emergency departments [3, 4]. The frequency of dermatological diseases was found to vary from 4% [3] to more than 9,2% in studies [3, 4]. These frequencies depend on how the dermatological disorder is defined, the period of the study and exhaustiveness of the evaluation.

The present study aimed to review original articles from paediatric emergency departments (PED) and family paediatricians' offices (FPO) in Europe over the last 20 years, and identify the most common skin pathologies diagnosed in these settings. Such a study can help physicians by providing insights into prevalent skin conditions in paediatric care settings, aiding in early diagnosis and appropriate management strategies. Additionally, it can inform healthcare professionals about trends in paediatric dermatological diseases.

Despite including original publications from the last 20 years (published from 2004 to 2024), the number of such studies in Europe was relatively small. There is a substantial number of studies from developing countries in Africa or Asia, but it was decided not to include them in the present research due to the presence of different pathogenic agents as well as general living conditions and comorbidities [5]. A small amount of that study indicates a need for creating new original articles from paediatric departments and family doctors. Several studies which show the estimated frequency of skin diseases in Europe have been focused on the adult population [6, 7].

## METHODS

Research conducted in Europe over the past 20 years (2004–2024) was included. However, due to the limited number of studies available, it was also decided to incorporate one Turkish clinical study due to its significant substantive contribution to the present work, its comparable results to European studies, and the level of healthcare in Turkish university centres, which aligns with European standards. While the present focus was primarily on studies from emergency

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departments and family physicians, the scarcity of such studies led us to also include large-scale research (over 1000 participants) from outpatient clinics associated with hospitals [8, 9]. The present review consists of all original studies that were found in publicly accessible databases such as Scopus, PubMed, and others which were conducted in emergency departments, family physicians and outpatient clinics. The search terms used included "paediatric skin disorders", "emergency department dermatology", "family physician skin conditions", and "paediatric dermatology Europe".

In total, 6 original studies (comprising 131,810 patients) were included in the review.

## RESULTS

The six articles reviewed differed in place of the study: three researches from PED [3, 4, 10], two from FPO [1, 10], and two from outpatient clinics [8, 9]. A study by Moiny-Fouquet et al. [10] presented results from both PED and FPO. Sample sizes used also varied, ranging from 103 patients in Mathilde Moiny-Fouquet to 115,233 patients in Cantarutti [1].

Table 1 depicts the number of children according to the location where the study was conducted. The general results of the studies are presented in Table 2.

### *Results from family paediatricians' offices*

The biggest study occurred in Italy for 6 years in FPO [1]. Compared to another study from FPO [10] (the study was carried out in the PED and FPO; results were not separate to 2 different groups) the most common diagnoses are similar. The highest number of cases in both studies was for atopic dermatitis.

Both studies noted a high number of urticaria cases. In the study from Italy [1], acute urticaria was more common, whereas in the other study, specific urticaria due to viral infection was frequently observed. The study emphasizes that the most common skin diseases (atopic dermatitis, contact dermatitis, and seborrheic dermatitis) appear to have increased, while the incidence of chronic skin diseases has remained unchanged.

In the study from France [10], there were more cases of acute dermatitis, such as urticaria due to viral infection and contact dermatitis. In contrast, the larger study from Italy also included chronic diseases like psoriasis, seborrheic dermatitis or dermatomycoses. This may be associated with the general nature of the PED.

### *Results from emergency departments*

Three studies involving patients from PED (2345 patients) [3, 4, 10] were examined. As expected, PED recorded higher frequencies of visits by children with acute skin disorders, especially urticaria, varicella, and insect bites, whereas many chronic entities (such as atopic dermatitis) were rarely encountered. There are significant differences compared to studies conducted in FPO [1, 10], where atopic dermatitis was the most common disease.

Both studies reported varying frequencies of viral and bacterial infections, possibly influenced by different data collection periods. The study by Auvin et al. [3] covered a five-month period spanning winter and early spring when non-specific viral exanthems (the most common diagnosis in that research) might be more prevalent than at other times of the year [11]. Similarly, impetigo and insect bites were more frequently reported in another study conducted over one year.

The one-year study by Kramkimel et al. [4], emphasized the impact of seasons. Non-specific viral exanthemas, impetigo, and insect bites were more frequent during the summer, while varicella was more prevalent during the winter months. Burns and urticaria showed no seasonal variations.

### *Results from outpatient clinics*

Two studies conducted in dermatology outpatient clinics [8, 9] were examined. The first study, from Turkey, included a total of 10,115 subjects aged 0–16 years [8]. The second study, conducted in Greece, included 4,071 subjects aged 0–12 years [9]. The differing age groups in these studies resulted in variations in the prevalence of the most common diseases.

The three most common diseases identified in the study from Turkey were acne vulgaris, verrucas, and irritant contact dermatitis. The most prevalent disease groups were infectious diseases, eczemas, and acne and follicular diseases. In contrast, the study from Greece found that the most common diseases were dermatitis/eczema, viral infections, and nevi. In the Turkish study, viral infections were the most common disease group. However, these infections were primarily observed in older children (aged 12–16), a demographic absent in the Greek study. Due to this age group difference, acne, which was the most common disease in the Turkish study (with 93% of the cases occurring in the 12–16 age group), was not reported in the Greek study. This discrepancy highlights the impact of age distribution on disease prevalence in dermatological research.

**Table 1.** Number of children studied according to location of study

| | Emergency department | Family paediatrician's office | Outpatient clinics | Total |
|---|---|---|---|---|
| **Number of patients** | 2345 | 115,279 | 14,186 | 131,810 |

**Table 2.** General results of studies — common diseases by specific studies, location, and year of publication [1, 3, 4, 8–10]

| Country | Sample | Location | Most common diagnoses | Year of publication |
|---|---|---|---|---|
| Turkey, Erzincan | • 10,115 children<br>• Age: 0–16 years | Dermatology outpatient clinic | 1. Acne vulgaris<br>2. Verrucas<br>3. Irritant contact dermatitis<br>4. Other viral diseases<br>5. Seborrheic dermatitis<br>6. Atopic dermatitis<br>7. Xeroderma<br>8. Other fungal diseases<br>9. Urticaria<br>10. Insect bite<br>11. Other bacterial diseases | 2018 |
| France | • 103 children<br>• Age: 0–18 years | 53 from the PED and 46 from private practice | 1. Atopic dermatitis<br>2. Insect bites<br>3. Nonspecific viral rash<br>4. Urticaria due to viral infection<br>5. Hand-foot-and-mouth disease<br>6. Impetigo<br>7. Contact dermatitis | 2020 |
| Greece | • 4071 children<br>• Age: 0–12 years | Dermatology outpatient clinic | 1. Dermatitis/eczema<br>2. Viral infections<br>3. Nevi<br>4. Scabies<br>5. Insect bites<br>6. Bacterial infections<br>7. Fungal infections<br>8. Alopecia areata<br>9. Psoriasis<br>10. Vitiligo | 2012 |
| Italy | • 145,233 children<br>• Age: 0–14 years | FPO | 1. Atopic dermatitis<br>2. Acute urticaria<br>3. Contact dermatitis<br>4. Seborrheic dermatitis<br>5. Dermatomycoses<br>6. Chronic urticaria<br>7. Psoriasis<br>8. Erythema nodosum<br>9. Ichthyosis | 2015 |
| France | • 1897 children,<br>• Age: 0-18 years | PED | 1. Urticaria<br>2. Varicella<br>3. Insect bites<br>4. Impetigo<br>5. Burns<br>6. Atopic dermatitis<br>7. Angio-oedema<br>8. Whitlow<br>9. Vulvitis<br>10. Herpetic<br>11. Gingivostomatitis | 2012 |

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**Table 2 (cont.).** General results of studies — common diseases by specific studies, location, and year of publication [1, 3, 4, 8–10]

| Country | Sample | Location | Most common diagnoses | Year of publication |
|---|---|---|---|---|
| France | • 395 children<br>• Age: 0–15 years and 3 months | PED | 1. Viral exanthema<br>2. Urticaria<br>3. Varicella<br>4. Atopic dermatitis<br>5. Diaper dermatitis<br>6. Herpetic gingivostomatitis<br>7. Henoch–Schönlein purpura<br>8. Impetigo<br>9. Mechanical purpura<br>10. Cellulitis<br>11. Abscesses<br>12. Paronychia<br>13. Molluscum contagiosum<br>14. Contact dermatitis | 2004 |

FPO — family paediatricians' offices; PED — paediatric emergency departments

## CONCLUSIONS

Analysing the data, it becomes apparent that many diseases could be avoided through proper methods. Three different studies show insect bites as one of the most common diagnoses. There is a simple strategy to prevent such skin problems, such as using repellents or wearing long-sleeved tops and trousers [12, 13].

Varicella, as one of the common cases seen in ED, could be reduced through vaccination [14].

During the data collection process for this study, it was observed that while a significant portion of dermatological symptoms are caused by viral infections, many are indicative of chronic and systemic diseases. Overlooking these symptoms can be dangerous. Therefore, it is crucial to consult patients with dermatological issues with specialists to ensure an accurate diagnosis and appropriate management.

The prevalence of skin diseases varies based on the location of the study. As expected, in PED emergency cases, such as urticaria or burns are more prevalent than in dermatology clinics or family paediatricians' offices. In outpatient dermatology clinics cases of chronic skin diseases are more commonly observed.

Dermatological diseases in children exhibit a wide range of manifestations that vary significantly between age groups. To fully understand the prevalence of dermatological diseases in the paediatric population, there is a need for more original studies conducted on large cohorts in Europe, with diagnoses stratified by age groups.

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