



## Pediatric Dermatology In Family Medicine: Common Conditions And Management Strategies

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<i>Article History</i>	<i>Abstract</i>
CC License	Among the most prevalent disorders are those related to the skin. However, in medical education and training, this class of illnesses is frequently disregarded. The first line of defence for the treatment of common dermatological diseases is a family physician. The purpose of our study was to evaluate the particular identification, management, encountering, and referral practices related to dermatological illnesses in family care. We also looked into the challenges and opportunities that family doctors experience in family medicine and saw a few of the paediatric dermatological diseases that family doctors may encounter. Finding areas of weakness in the clinical therapy of certain dermatological disorders, however, will be aided by assessing how family doctors treat particular ailments. Thus, this needs assessment might serve as a foundation for future research on the efficacy of family medicine in treating common paediatric dermatological problems as well as aid in the development of evidence-based training for family physicians in the area.

## Introduction

Family medicine is a branch of medicine that concentrates on the treatment of both short-term and long-term illnesses, while also giving importance to the overall health and wellness of the patient. It is categorized as a clinical specialty, together with internal medicine, pediatrics, and surgery, and should not be confused with non-clinical fields such as public health and community medicine. Apart from taking care of their patients, family doctors are also involved in advocating for social issues and promoting community health. They have a crucial role in managing common skin diseases in their community, as they are knowledgeable about the commonly prescribed medications for these conditions and know when to refer patients to specialists [1].

Family medicine is a vital component of the healthcare system, as family doctors are often the first point of contact for patients seeking medical assistance. They are trained to provide comprehensive care for individuals of all ages, from infants to the elderly, and are skilled in managing a wide range of health conditions. In addition to diagnosing and treating illnesses, family doctors also emphasize preventive care, encouraging patients to adopt healthy lifestyle habits and undergo regular screenings to detect any potential health issues early on. This proactive approach to healthcare helps to minimize the risk of developing chronic diseases and improves overall quality of life for patients [2].

Globally, pediatric dermatological diseases pose a significant challenge. Only 30% to 40% of individuals with skin diseases receive treatment from dermatologists. This means that most skin conditions are managed by clinicians in other disciplines, with 22% being family doctors. Research from the mid-1990s revealed that a large number of doctors provided suboptimal care for patients with skin conditions. In one study, dermatologists found that only 40% of patients with skin diseases received the best possible care. As medical knowledge advances, the identification and management of skin problems present a growing challenge for family physicians [3].

Children have cutaneous problems often; in fact, skin-related issues can arise in up to 30% of paediatric primary care visits. Eighty percent of teenagers aged twelve to eighteen suffer from acne, a common condition seen by dermatologists. The cause of acne vulgaris (AV) in genetically predisposed individuals involves both androgenic activity and specific ligands in the pilosebaceous unit, which stimulate keratinocytes and infundibular sebocytes to proliferate, leading to lipogenesis and comedogenesis [4].

Atopic dermatitis (AD) is a chronic inflammatory condition categorized under atopic diseases, which also include asthma and allergies to foods and environments. By the time they are teenagers, twenty-five percent of children develop eczema symptoms or wheezing, and 85 percent of AD cases start before the age of five [5].

Psoriasis is a long-term immunological disorder characterized by persistent skin inflammation caused by T cells. The production of cytokines by activated T cells and dendritic cells, including TNF-alpha, IL-17, IL-23, and interferon gamma, leads to the proliferation of keratinocytes [6]. The prevalence of psoriasis in pediatric patients is unknown, but 37% of adult psoriasis sufferers experience symptoms before the age of 20.

Inflammations and/or breakouts in the diaper-covered areas, such as the inner thighs, buttocks, perianal, and vaginal regions, are referred to as diaper region dermatitis (diaper dermatitis). Diaper dermatitis has a prevalence that ranges from 7% to 35%, depending on the age groups and research population. Diaper dermatitis affects about 25% of infants in their first four weeks of life and is most common between the ages of nine and twelve months [7].

The role of family physician in addressing these common pediatric dermatological concerns is crucial. With their comprehensive understanding of the child's medical history and ongoing health, family physicians are well-positioned to diagnose, treat, and provide ongoing management for these conditions. They can offer guidance on lifestyle modifications, topical treatments, and, when necessary, referrals to dermatologists for specialized care. Additionally, they play a pivotal role in educating parents about preventive measures and early signs of these conditions, empowering them to actively participate in their child's skincare routine and overall well-being [8].

Diagnosing and treating illnesses, as well as knowing when to refer patients to the appropriate specialist is important. Given the increasing complexity of pediatric dermatological diseases, it is imperative that healthcare providers across various disciplines receive adequate training and resources to effectively diagnose and manage these conditions. As medical knowledge continues to evolve, it is crucial for family physicians to stay updated on the latest developments in dermatology in order to provide the best possible care for their patients. Collaboration between different specialties and ongoing education are essential in addressing the challenges

posed by pediatric dermatological diseases on a global scale [9]. This article will delve into the historical background of the field and the prevalent conditions that the specialty is encounter, as well as strategies for addressing them.

### **The past of pediatric dermatology**

The first international conference in Mexico City and the International Society of Pediatric Dermatology in October 1972 were the first steps towards creating pediatric dermatology as a subspecialty, as the skin issues were present in 10-30% of pediatric care visits. The Society for Pediatric Dermatology (SPD) was established eighteen months later. The Pediatric Dermatology magazine was established in 1982, and the Dermatology Section sponsored by the American Academy of Pediatrics was founded in 1986. There was a lot of initial interest in the specialty, and most practitioners completed residency training and obtained certification in dermatology and pediatrics. Over the past forty years, a vast amount of clinical data has been uncovered, inspiring articles, conferences, and textbooks. The American Board of Dermatology supported formal 1- to 2-year programs, and the Accreditation Council of Graduate Medical Education acknowledged this body of knowledge in 2000. Subspecialty certification exams have been held every other year since 2004, and a recertification program has been put in place. The demand for pediatric dermatological treatments has persistently increased [10].

### **Role of family physician**

**CHOOSING A TRAINING CENTER:** The best way to educate a family physician interested in dermatology is by integrating a structured program with concurrent clinical attachment. Trainees should commit to at least a year, participating actively in all clinical, academic, and outpatient activities. Comprehensive training will build confidence in diagnosing and treating common skin disorders. The center's facilities should resemble those in primary care settings, ensuring a smooth transition post-training [11].

A full-time commitment from the trainee means being prepared to balance student life, allocating time for regular study sessions, reviewing foundational material, and staying updated on the latest practices and treatment recommendations in dermatology while delivering care. It is recommended to include a research project during this period to enhance the field of interest and expand knowledge depth. For many, managing family responsibilities alongside a full-time profession can significantly impact the decision to pursue and complete a program [11].

Several factors should be considered when selecting a suitable center for family physicians to receive dermatology training. Ideally, the center should be intellectually oriented, providing various clinical-pathological conferences, case presentations, and opportunities for two-way communication with trainers. Adequate facilities for day care procedures and a sufficient number of certified, experienced trainers are crucial for providing guidance and supervision to trainees. Completing clinical attachment in a tertiary referral center, where patients receive comprehensive treatment from a team of skilled oncologists, pathologists, and dermatologists, is optimal. A good patient load consisting of new and follow-up patients is necessary to offer trainees clinical exposure to a range of skin disorders, distinct clinical presentations, and disease progression. In addition to General Dermatology, gaining knowledge about specialist services including Allergy/Contact Dermatitis, Dermatologic Surgery, Hansen's disease, Autoimmune and Immunobullous disorders, Pediatric Dermatology, and Genitourinary Medicine would be advantageous [11].

**SELECT A PROGRAM:** When choosing a program, trainees can pick from three available structured programs. Remote learning over the internet is easily accessible, with considerations including duration, subject matter (common Asian skin problems), and relevance to practice. Most remote courses last from nine months to a year, while in-house courses are location-specific, such as in the United Kingdom. Distance learning modules require weekly time allocation for online work, tutorials, and conferences. The number of practical sessions is important, and some programs require assignments before deadlines. Problem Based Learning (PBL) assignments reflect real patient scenarios and are followed by feedback and resource suggestions. Thorough literature research is crucial, aiding in finding practice guidelines and resource centers for future use. Assessment methods indicate program outcomes, covering theory, practical application, and managerial challenges. Finally, the program's cost and certification type are equally important considerations [12].

Family Physicians will be better equipped to identify and treat skin diseases through comprehensive training, leading to more confident and accurate diagnosis. They should be able to recognize cases that necessitate

referral to tertiary care and focus on managing cases that can be effectively treated at the primary care level [13].

This category encompasses patients with uncertain diagnoses, those requiring biopsy in the absence of pathology services, individuals in need of specialized therapy such as phototherapy, and those suspected of having skin cancer. Recognizing medication reactions and dermatological emergencies would enable practitioners to refer patients to tertiary care for appropriate admission and inpatient treatment. Coordinated care between dermatologists and family physicians will further enhance the current skin care provided to patients [13].

It's crucial to understand that possessing dermatological training doesn't automatically authorize a family physician to practice dermatology. The expert in dermatology is still a Dermatologist, an Internal Medicine physician with three years of specialized training in dermatology (advanced masters in dermatology or similar certification). A Dermatologist is better qualified to manage complex dermatological situations, as skin is a vital component of Internal Medicine, an area in which Family Physicians have limited training. The potential lack of standardization in services provided by Family Physicians graduating from various training programs is a concern that may arise [14].

Therefore, an accreditation process to evaluate the services provided by Family Physicians with Special Interest would be essential for additional training in primary care. A committee comprising family physicians and dermatologists could potentially manage this on a national scale. Dermatology-trained family physicians can help reduce the patient load at tertiary centers, provide skin care in the community, and facilitate access to dermatological services for those in need in the future [14].

### **Prevalence of pediatric skin disorders**

Skin and subcutaneous diseases rank as the 18th greatest cause of disability-adjusted life years (DALYs) worldwide, accounting for 41 [15].6 million DALYs and 39.0 million Years Lost due to Disability (YLDs) in 2013. Skin conditions were the fourth most common cause of disability globally, excluding mortality. Between 1990 and 2017, there was a 46.8% increase in skin and subcutaneous diseases. An analysis of eighteen prevalence studies yielded statistics unique to children, ranging from 21 to 87% of skin disorders [16].

Nevertheless, financing and research efforts do not keep pace with the relative impairment of skin illnesses. Even though the majority of dermatological illnesses do not cause mortality, they might cause suffering and incapacitating symptoms [17]. It affects the friends and families of patients as well as their social, physical, and mental wellbeing. Significant discomfort and shame are experienced by children in particular. Medical professionals and governments alike frequently fail to consider the personal impact that skin diseases have on their patients. Here, the role of family medicine and observing its importance [18].

Skin disorders are becoming increasingly common due to a number of factors, including the global warming trend, the HIV epidemic, shifting societal behaviors, displacement from home, and increased usage of industrial toxins. When the illness load is broken down by age and geographical area, there are additional differences [19]. For example, eczema is prevalent in industrialized nations, whereas infections and infestations are more common in underdeveloped nations. Children are more likely than adults to have pyoderma, tinea capitis, and, to a lesser extent, scabies. Peripheral health units can successfully and sustainably handle the majority of dermatological problems, resulting in substantial improvements in patient outcomes and public health [20].

### **Common pediatric dermatology cases:**

**ACNE:** is a common skin condition that affects a large portion of the population in industrialized countries, with a prevalence of 79 to 95 percent among American children. However, some nonwestern societies, such as the Kitavan Islanders of Papua, New Guinea, and the Aché hunter-gatherer society of Paraguay, have very low or no cases of acne. While genetic variations do not fully account for these differences, environmental factors, particularly diet, are believed to play a significant role [21].

Recent research suggests that food can impact various biological processes related to acne, including the growth of basal keratinocytes, sebum production, colonization of bacteria, and inflammation in and around the affected areas. There is evidence to suggest that the dietary glycemic load and the consumption of dairy products, especially low-fat ones, may be linked to the development or exacerbation of acne [22].

A case-control study involving young adults showed that those with acne consumed significantly more skim and low-fat milk compared to those without acne. However, there was no significant difference in overall food intake, fats, or glycemic load between the two groups. Additionally, body mass index and total calorie intake did not significantly differ across the groups [23].



**ALLERGIES, ATOPIC DERMATITIS, AND EARLY PEANUT INTRODUCTION:** Previously, experts advised against introducing peanuts to infants at high risk of allergies. However, observational studies suggest that introducing high-risk allergens in supplementary foods may be protective. The Learning Early About Peanut Allergy (LEAP) research compiled data concluding that early exposure could be beneficial [24].

In a recent study, 640 babies with severe eczema and/or an egg allergy were randomly assigned to eat peanuts until age five, or not [25]. The prevalence of peanut allergy was 13.7% in the avoidance group at 60 months, and 1.9% in the consumption group at five years. Thus, early peanut introduction may lower the incidence of peanut allergy in high-risk children [26].

Early peanut introduction may be beneficial for babies with early-onset atopic illness (allergies). Given the potential severity of allergic responses, skin testing or in-clinic monitoring of peanut consumption is advised. A first consultation with an allergist may be appropriate before continuing peanut introduction at home [27].

Children with atopic dermatitis often experience disrupted sleep patterns, affecting neurocognitive development and quality of life [28]. 73 pediatric patients with atopic dermatitis participated in a study using melatonin 3 mg/day or a placebo for four weeks, followed by a two-week washout period and a crossover four-week study. The SCORAD index dropped by 9.1, from a mean of  $49.1 \pm 24.3$  to  $40.2 \pm 20.9$  with melatonin. Sleep-onset latency decreased by 21.4 minutes following melatonin administration compared to a placebo. No patients withdrew due to adverse events, and none were recorded during the trial [29]. Family physicians caring for children with atopic dermatitis should know their sleeping habits.

Potential treatments for atopic dermatitis include the development of crizaborole ointment, a novel topical PDE4-inhibitor currently undergoing Phase III studies [30]. Apremilast, an oral PDE4 inhibitor, and dupilumab, a human monoclonal antibody against IL-4, are examples of systemic medicines in development [31].

**DIAPER DERMATITIS:** One of the most common skin conditions among newborns and babies who are unable to control their bowel or bladder movements, resulting in a wet environment, is nappy dermatitis. Certain germs can grow in a damp environment or compromised skin barrier. The most frequent cause of candidal superinfection is *Candida albicans*. In the treatment of nappy dermatitis, additional pathogenic strains including *S. aureus* and *S. pyogenes* should be considered less frequently [32].

Treating nappy dermatitis mainly involves assessing the disease's severity. The severity of nappy dermatitis can be categorized as an early, mild, moderate, or severe condition based on clinical practice, despite the development of many rating scales for this purpose. Erythematous papules that are dispersed and pinpoint in nature are indicative of the disease's early stage. Erythema with maceration becomes increasingly noticeable as the illness moves from the mild to the moderate phase, and pain and superficial erosions may also accompany it. Punctured-out lesions or erosions with raised edges, pseudoverrucous eroded papules, and nodules are indicative of severe illness. Diaper dermatitis must be treated as soon as possible when clinical indications of infection are identified. Usually, patches of candidiasis are fiery-red, strongly marginated, and accompanied by satellite papules and pustules. Numerous manifestations, including superficial vesicles or bullae, erosions, erythematous papules based on follicles, and pustules, can be caused by bacterial superinfections [32].

As a result, the course of treatment for nappy dermatitis might change based on the child's underlying medical issues, the length of the skin eruptions, any concomitant secondary infections, and clinical findings. Diaper dermatitis is typically treated with topical barrier preparations (panthenol/dexpanthenol, lanolin, zinc oxide, etc.) for both prevention and treatment; low-potency corticosteroids for inflammatory skin; topical antifungal agents (nystatin, clotrimazole, miconazole, ketoconazole, etc.) for candidal superinfection; and topical antibacterials (mupirocin, etc.) for secondary bacterial infections. When making a differential diagnosis for diaper dermatitis, it is important to take into account a number of other conditions, including i. eczematous diseases, infantile psoriasis, infestations/infections, nutritional disease, autoimmune diseases and malignancy [33]

Preventive measures include keeping the skin surface dry, minimizing rigorous cleaning, protecting the skin barrier, and minimizing direct contact with urine and faeces. The following are general guidelines for both treatment and prevention: changing diapers often, using new, innovative disposable diapers made of absorbent and aeration materials, cleaning the diaper gently while changing it, and applying barrier creams to reduce the exposure of urine and faeces [34].

## Maintenance and care

Dermatology typically uses tactics to preserve treatment outcomes, which means that it heavily depends on "tips" and at-home care. Clinic visits are often attributed to perioral irritating dermatitis. Wet wipes, pacifiers, and excessive drooling can all contribute to this bothersome condition [35].

Parents of kids with perioral irritant dermatitis should discourage their kids from sucking on blankets or other objects and shouldn't put socks on their hands while they sleep. This causes irritation by promoting the production of saliva [35].

Apply a thick barrier-type ointment to the child's cheeks and chin before they eat or go to bed. Families can use several techniques at home to lessen atopic dermatitis, even though phototherapy and systemic medications including methotrexate, azathioprine, and mycophenolate may be beneficial for children with atopic dermatitis. Atopic dermatitis should, by definition, require the avoidance of a number of common home items: most shampoos, scented detergents, and a large number of so-called "baby" items like lotions and soaps. It is important to inform parents that a number of seemingly harmless items, such as soaps, cleansers, and lotions with labels advertising "natural" or "organic" components, may cause special irritation to children who have atopic dermatitis since they include botanical ingredients. Topical steroids and calcineurin inhibitors are two common treatments for atopic dermatitis; however, family physicians may also find it beneficial to give kids probiotics or synbiotics on a daily basis, moisturise their skin with coconut oil or shea butter, and develop a regimen for moisturising after baths. Baths with bleach can be beneficial in preventing bacterial illnesses [35]. A paste like Triple Paste® can be used to treat diaper rash, which is a typical complaint, every time a diaper needs to be changed. Applying 2.5% hydrocortisone ointment twice a day might help alleviate this painful illness even more [35].

Family physicians may also encounter instances of "car seat dermatitis." This happens when the youngster has an allergy to the linings of some car seats or is bothered by them. Adding a cotton cover or other cover to the car seat to prevent the child's skin from coming into touch with the liner is a simple solution to control this issue [35].

## Conclusion

Chronic dermatologic conditions as psoriasis, acne, topic dermatitis, and diaper dermatitis have a substantial influence on paediatric patients (AD). Family doctors are aware of the significance of treating skin issues in their patients. Children's interactions with family, classmates, and self-image are negatively impacted in the early stages by the visible component of these disorders. Therefore, if potential management options are put into place, such as matching up children with the same diagnosis and giving parents and educators information to help them better understand these chronic skin illnesses, pediatric patients should receive the help they need to become resilient in the face of these difficulties. Family doctors administer medications to treat a variety of skin conditions in addition to diagnosing them. We identified in the research the educational and regulatory aspects of family physicians' clinical management of common dermatologic conditions. To shed light on the factors that influence the usage of family medicine and the efficiency of family physician clinics in treating certain skin conditions, more study is necessary.

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