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ARTIGO ORIGINAL

Doenças dermatológicas e fatores de risco associados em crianças do Norte do Brasil: uma atualização entre 2014-2019

Dermatological disorders and associated risk factors among children from northern Brazil: a 2014-2019 update

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Palavras-chave:
Doenças de Pele,
Pediatria,
Epidemiologia,
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Resumo

Objetivos: Doenças dermatológicas são uma das principais causas de consultas médicas na infância e sua prevalência é influenciada pelo ambiente, pela genética e por fatores socioeconômicos. Neste artigo, objetivamos avaliar o perfil epidemiológico de paciente pediátricos atendidos em um serviço de referência localizado na região Amazônica, Norte do Brasil. **Métodos:** Foi feita uma análise retrospectiva de prontuários de 638 pacientes pediátricos (0-15 anos de idade) atendidos em um centro dermatológico de referência, durante janeiro de 2014 a dezembro de 2019. Foram colhidas as seguintes variáveis: gênero, área de residência (rural ou urbana), diagnóstico, ano do diagnóstico e comorbidades associadas. As dermatoses foram confirmadas por meio de informações disponíveis da história do paciente, apresentação clínica e exames complementares. **Resultados:** Um total de 831 diagnósticos foi encontrado, visto que 182 (28.52%) das crianças tinham mais de uma dermatose. A idade média foi de 7.7 anos e a razão de homem para mulher foi de 1:0.94. As cinco categorias de doenças mais comuns foi eczemas (29.72%), infecção fúngica (10.83%), tumores (9.51%), desordens pigmentares (8.90%) e urticária/prurido/erupções por drogas (6.26%). Dermatite atópica foi a doença mais encontrada, sendo 18.41% de todos os diagnósticos. A proporção de condições dermatológicas não teve diferença estatísticas entre sexo, com exceção das desordens pigmentares que foram significativamente maiores em pacientes do sexo feminino (p=0.01). **Conclusões:** Eczema, infecções fúngicas e tumores foram os grupos mais comuns de desordens de pele entre as crianças. No entanto, são necessários mais estudos no Norte do Brasil para definir correlações.

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Skin Diseases,
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Abstract

Objectives: Skin disorders are one of the main causes of medical consultation during childhood and its prevalence is highly influenced by environmental, genetic, and socioeconomic factors. In this study, we aimed to evaluate the epidemiological profile of pediatric patients attended at a dermatology referral service located in Amazon region, northern Brazil. **Methods:** We retrospectively reviewed the medical history data of 638 pediatric patients (aged 0-15 years) presented at a dermatology referral service, between January 2014 and December 2019. The following variables were collected: gender, area of residence (urban or rural), diagnosis, date (year) of diagnosis, and comorbidities. Dermatoses were confirmed based on the available information of the patients' detailed history, clinical presentation, and additional medical exams. **Results:** A total of 831 diagnoses were included since 182 (28.52%) children had more than one dermatosis. The average age was 7.7 years, and the male-to-female ratio was 1: 0.94. The five most common categories of skin disorders were eczemas (29.72%), fungal infections (10.83%), tumors (9.51%), pigmentary disorders (8.90%), and urticaria/pruritus/drug eruptions (6.26%). Atopic dermatitis was the most reported disease, accounting for 18.41% of all diagnoses. The proportions of most dermatological conditions did not statistically differ between gender, except for pigmentary disorders that were significantly higher in female patients (p=0.01). **Conclusions:** Eczemas, fungal infections, and tumors were the most common groups of skin disorders among the evaluated children. However, more studies are needed to improve these data from northern Brazil.

INTRODUCTION

Skin disorders are very common during childhood, accounting for 30% of all consultations in general pediatrics[1] and 12% of visits to referral centers of dermatology[2]. The prevalence pattern of these conditions is influenced by the environmental, genetic, and socioeconomic factors of the evaluated population, varying from mild/self-limited cases to debilitating and potentially life-threatening illnesses[1,2]. Since numerous cutaneous diseases can affect children and impact on their life quality, the understanding of its distribution and associated risk factors are important to encourage preventive and treatment strategies from healthcare systems. However, studies about this particular issue are still lacking in Brazil, especially in the Amazon region.

Therefore, the aim of this study was to evaluate the epidemiological profile of pediatric patients attended at a dermatology referral service in Belém, Pará, northern Brazil.

METHODS

We retrospectively reviewed medical records of 638 pediatric patients (aged 0-15 years) presented at a dermatology referral service, northern Brazil, between January 2014 and December 2019. Children were divided into infants (0-2 years), preschoolers (3-6 years), scholars (7-11 years), and teenagers (12-15 years). The following epidemiological data were collected: gender, area of residence (urban or rural), diagnosis, date (year) of diagnosis, and comorbidities. All dermatoses were confirmed based on the available information of the patients' detailed history, clinical presentation, and additional medical exams. Then, diagnoses were stratified into 14 different categories as follows: bacterial infections, fungal infections, viral infections, parasitic infections, eczemas, urticaria/pruritus/drug eruptions, papulosquamous/lichenoid disorders, tumors, disorders of sweat/sebaceous glands, genetic diseases, hair/nail disorders, connective tissue diseases, and miscellaneous.

Results were expressed by mean, standard deviation (SD), and frequency distribution. The chi-square test was used to compare proportions. All statistics were performed using SPSS software version 25.0 (IBM Corp., Armonk, NY, U.S.) and a p-value≤0.05 was assumed as statistically significant.

The study protocol was approved by the research ethics committee under decision number 3.933.739/2020 (CAAE 28816019.8.0000.8767).

RESULTS

A total of 831 diagnoses were made from the 638 children included in the study, as 182 (28.52%) had more than one dermatosis. Table 1 describes the clinical and demographic characteristics of the patients. There was a slight predominance of male gender (51.41%) with a male-to-female ratio of 1: 0.94. The average age was 7.7 years (SD: 4.6) and ranged from 1 month to 15 years. The most frequently presenting age group was scholars (33%), followed by teenagers (25%), preschoolers (12%), and infants (10%). Most patients resided in urban areas of the state (83.86%), and presented at the outpatient clinic in 2014 (20.69%). Only 135 children (21.16%) had at least one associated disease, especially asthma (27.16%), allergic rhinitis (23.46%), and other allergies (12.96%).

The diagnoses according to the categories of the study are described in Table 2. The five most common categories of dermatosis were eczema (29.72%), fungal infections (10.83%), tumors (9.51%), pigmentary disorders (8.90%), and urticaria/pruritus/drug eruptions (6.26%). Atopic dermatitis accounted for 18.41% (n=153) of all diagnoses, followed by vitiligo (7.22%, n=60), *pityriasis alba* (6.02%, n=50), *tinea capitis* (5.29%, n=44), and acne (4.33%, n=36). Connective tissue and genetic diseases represented the least common conditions, accounting for 1.32% (n=11) and 2.41% (n=20) of the cases, respectively.

The distribution of dermatosis according to age groups is shown in Table 3. Out of the 831 diagnoses, 285 (34.3%) were from scholars, 203 (24.43%) from adolescents, 186 (22.38%)

Table 1. Sociodemographic characteristics of the patients (n=638).

	n (%)	*p*-value
Gender		
Male	328 (51.41)	0.50
Female	310 (48.59)	
Age group (years)		
0–2	119 (18.65)	< 0.0001
3–6	141 (22.10)	
7–11	216 (33.86)	
12–15	162 (25.39)	
Origin		
Urban	535 (83.86)	< 0.0001
Rural	103 (16.14)	
Date of diagnosis (year)		
2019	126 (19.75)	0.0006
2018	98 (15.36)	
2017	115 (18.03)	
2016	78 (12.23)	
2015	89 (13.95)	
2014	132 (20.69)	
Number of comorbidities		
0	503 (78.84)	< 0.0001
1	114 (17.87)	
≥ 2	21 (3.29)	

Table 2. Distribution of skin disorders according to pathological groups (n=831).

	n (%)
Eczemas	247 (29.72)
Fungal infections	90 (10.83)
Tumors	79 (9.51)
Pigmentary disorders	74 (8.90)
Urticaria, pruritus and drug eruptions	52 (6.26)
Viral infections	50 (6.02)
Disorders of sweat and sebaceous glands	47 (5.66)
Parasitic Infections	42 (5.05)
Papulosquamous and lichenoid disorders	35 (4.21)
Hair and nail disorders	29 (3.49)
Bacterial infections	28 (3.37)
Genetic diseases	20 (2.41)
Connective tissue diseases	11 (1.32)
Miscellaneous	27 (3.25)

from preschoolers, and 157 (18.89%) from infants. Scholars accounted for most cases of eczemas (35.22%, n=87), fungal infections (37.78%, n=34), pigmentary disorders (54.05%, n=40), bacterial infections (32.14%, n=9), parasitic infections (35.71%, n=15), and papulosquamous/lichenoid disorders (45.71%, n=16). The majority of tumors (29.11%, n=23) and urticaria/pruritus/drug eruptions (44.23%, n=23) were from infants. Viral infections (42%, n=21), hair/nail disorders (34.48%, n=10), and genetic diseases (30%, n=6) were most prevalent in preschoolers, whereas disorders of sweat/sebaceous glands (76.60%, n=36), connective tissue diseases (45.50%, n=5), and miscellaneous conditions (44.44%, n=12) were predominantly seen in teenagers.

There was no statistical difference in gender distribution according to the area of residence, presence of comorbidities, the date (year) of diagnosis, and the age groups of preschoolers, scholars, and teenagers. However, children aged 0-2 years were predominantly male (p=0.001). The proportions of most dermatological conditions did not statistically differ between gender, except for pigmentary disorders that were significantly higher in female patients (p=0.01). Eczemas, urticaria/pruritus/drug eruptions, papulosquamous/lichenoid disorders, tumors, disorders of sweat/sebaceous glands, and all subtypes of skin infections (bacterial, fungal, viral, and parasitic) were more prevalent in males; whereas genetic diseases, hair/nail disorders, connective tissue diseases, and miscellaneous conditions were more common in females (Table 4).

DISCUSSION

To our knowledge, few studies have evaluated the epidemiological distribution of pediatric dermatosis in Brazil. In summary, our sample was predominantly composed of children with male gender, aged 7-11 years, and from urbanized residence areas. Moreover, eczemas were the most frequent skin disorders, with atopic dermatitis as the leading diagnosis (18.41% of the 831 cases).

Analyzing the results from similar national studies conducted in the south, southeast, and northeast of the country, we identified that most patients visiting the services of pediatric dermatology are females, aged 5-12 years, resident of urban zones, and mainly affected with allergic/eczematous conditions (17.64 to 37.2%), especially atopic dermatitis (19.7 to 60.8% of all diagnoses)[3-6]. This epidemiological pattern is quite comparable to our findings, indicating that such dermatoses are very prevalent among the Brazilian pediatric population. It also corroborates with other international studies that reported eczemas/dermatitis as the most common group of diseases, with a rate ranging from 23.9 to 49.9%[7-10]. In Brazil, the prevalence of atopic dermatitis symptoms is described as 8.2% in children and 5% in adolescents, which is comparably lower than observed in Europe and North America[11]. In our sample, the high proportion of patients with atopic dermatitis was probably influenced by the considerable prevalence of children with allergic comorbidities, especially asthma.

Skin infections are also highly frequent during childhood and adolescence, representing the principal cause of pediatric dermatology consultations in several studies. In previous

Table 3. Distribution of skin disorders according to age groups (n=831).

	Age group (years)			
	0-2	3-6	7-11	12-15
	n (%)	n (%)	n (%)	n (%)
Bacterial infections	7 (4.46)	6 (3.23)	9 (3.16)	6 (2.96)
Fungal infections	15 (9.55)	26 (13.98)	34 (11.93)	15 (7.39)
Viral infections	2 (1.27)	21 (11.29)	19 (6.67)	8 (3.94)
Parasitic infections	14 (8.92)	6 (3.23)	15 (5.26)	7 (3.45)
Eczemas	52 (33.12)	62 (33.33)	87 (30.53)	46 (22.66)
Urticaria, pruritus and drug eruptions	23 (14.65)	6 (3.23)	16 (5.61)	7 (3.45)
Pigmentary disorders	5 (3.18)	10 (5.38)	40 (14.04)	19 (9.36)
Hair and nail disorders	3 (1.91)	10 (5.38)	7 (2.46)	9 (4.43)
Disorders of sweat and sebaceous glands	3 (1.91)	1 (0.54)	7 (2.46)	36 (17.73)
Tumors	23 (14.65)	18 (9.68)	17 (5.96)	21 (10.34)
Papulosquamous and lichenoid disorders	3 (1.91)	8 (4.30)	16 (5.61)	8 (3.94)
Genetic diseases	5 (3.18)	6 (3.23)	5 (1.75)	4 (1.97)
Connective tissue diseases	0 (0.0)	2 (1.08)	4 (1.4)	5 (2.46)
Others	2 (1.27)	4 (2.15)	9 (3.16)	12 (5.91)
Total	157	186	285	203

research involving 10,115 children, 24.62% of the cases were reported as cutaneous infectious diseases, especially of viral etiology[12]. Viruses were also the most frequent pathogens from skin infections in the observations of Wenk and Itin (2003)[9], in Switzerland, and Vakirlis et al. (2017)[7], in Greece, with rates of 13.41%, and 12.5%, respectively. In our study, infections were mainly caused by fungi, disagreeing with the epidemiological pattern from the southern and southeastern areas of Brazil, where viral dermatosis also predominates[4,5]. This local variation is probably due to the hot and humid climates from the northern region of the country. Other researchers conducted in Tanzania[13], Nepal[14], and Nigeria[15], also reported mycoses to be the most common skin infections among pediatric patients, which is similar to our findings.

We also observed a low prevalence of bacterial infections in our sample (3.37%), contrasting to 19.09% reported by El-Khateeb (2011)[16] and 21.3% by Kelbore et al. (2019)[8]. This could represent an improvement in hygiene, basic sanitation, socioeconomic status, and access to healthcare in the local community. In a previous study conducted in our department, impetigo was the only bacterial infection diagnosed in patients under the age of 15[17]. Interestingly, this trend remained similar in our research, as impetigo was the most frequent subtype of bacterial infection (42.85%), which is similar to other reports[8,16]. In our sample, the following two most common bacterial infections were leprosy and cutaneous tuberculosis, accounting for 25% and 17.85% of cases, respectively. These diseases were known to be endemic in Brazil, especially in the state of Pará, and its identification in pediatric patients appears as a current situation in referral services in dermatology. Therefore, preventive and early treatment strategies should be prioritized by health services as these diseases have a long course of treatment and commonly impair the quality of life.

At this point, it is evident that eczemas/dermatitis and infections are usually the two most prevalent dermatoses in the pediatric population, having different frequencies between studies[5,7,8,10,12,13,15]. The following positions in this ranking, however, are occupied by variable groups of skin disorders. In our study, tumors were the third most frequent conditions, especially nevi and hemangioma, which is probably related to the request for additional investigation in our department, such as biopsy and/or surgical excision. In agreement with our findings, a similar trend was also observed by Afsar (2011)[10], in Turkey, and Silva and Abagge et al. (2019)[5], in southern Brazil. Pigmentary disorders accounted for 8.9% of diagnoses in our sample, which corroborates with 7.4% reported by Kiprono et al. (2015)[13] and Vakirlis et al. (2017)[7]. Disorders of skin appendages (hair follicles, sweat/sebaceous glands) were identified to be one of the most common dermatoses among children, with rates ranging from 10.2% to 18.45% in different populations[5,10,12]. In our study, the rate was only 5.66%, but acne was the fifth most prevalent diagnosis, possibly due to the high number of adolescents in our sample.

CONCLUSIONS

Eczemas, fungal infections, and tumors were the most common groups of skin disorders among the evaluated children. However, more results are needed to improve these data from northern Brazil. We expect that the epidemiological pattern of pediatric dermatosis found in this study acts as a helpful tool to implement preventive strategies and provide adequate healthcare service to the local population.

Table 4. Epidemiological characteristics and distribution of skin disorders according to gender (n=831).

	Male	Female	
	n (%)	n (%)	*p*-value
Age group (n=638)			
0-2 years	78 (23.78)	41 (13.23)	0.001
3-6 years	76 (23.17)	65 (20.97)	0.39
7-11 years	100 (30.49)	116 (37.42)	0.30
12-15 years	74 (22.56)	88 (28.39)	0.30
Area of residence (n=638)			
Urban	283 (86.28)	252 (81.29)	0.19
Rural	45 (13.72)	58 (18.71)	0.23
Presence of comorbidity (n=638)			
Sim	67 (20.43)	68 (21.94)	1.00
No	261 (79.57)	242 (78.06)	0.42
Skin disorders (n=831)			
Bacterial infections	17 (3.95)	11 (2.74)	0.34
Fungal infections	48 (11.16)	42 (10.47)	0.59
Viral infections	30 (6.98)	20 (4.99)	0.20
Parasitic infections	23 (5.35)	19 (4.74)	0.64
Eczemas	130 (30.23)	117 (29.18)	0.44
Urticaria, pruritus and drug eruptions	28 (6.51)	24 (5.99)	0.67
Pigmentary disorders	26 (6.05)	48 (11.97)	0.01
Hair and nail disorders	14 (3.26)	15 (3.74)	1.00
Disorders of sweat and sebaceous glands	27 (6.28)	20 (4.99)	0.38
Tumors	43 (10.0)	36 (8.98)	0.49
Papulosquamous and lichenoid disorders	20 (4.65)	15 (3.74)	0.49
Genetic disorders	9 (2.09)	11 (2.74)	0.82
Connective tissue disorders	4 (0.93)	7 (1.75)	0.54
Others	11 (2.56)	16 (3.99)	0.44

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