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# Prevalence of skin diseases of the pediatric population in the Southeastern Anatolia, Turkey

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**Abstract**

Skin diseases are quite common in childhood and affected by geographic, cultural, and socio-economic conditions. There is no reported study about the prevalence of skin diseases of the pediatric population in the Southeastern Anatolia, Turkey. We sought to investigate the skin diseases of the pediatric population in this region. A cross-sectional study was conducted on 3957 patients, age range 0-17 years, in the Dermatology Outpatient Clinic. The patients were classified according to the age groups: infancy (0-2 years), preschool period (3-5 years), school period (6-11 years), and adolescent period (12-17 years). Skin diseases were evaluated under 17 disease subgroups. Of 3957 pediatric patients (2109 female and 1848 male), 695 (17.56%) were in infancy, 465 (11.75%) were in preschool period, 823 (20.8%) were in school period, and 1974 (49.89%) were in adolescent period. Eczematous diseases (30.12%) were the most common skin disease group, followed by acne (26.35%), infectious diseases (19.03%), pigmentation disorders (4.06%), other-unclassified diseases (3.58%), xerosis cutis (2.8%), urticaria (2.68%), hair diseases (2.72%), papulosquamous diseases (1.74%), photodermatoses (1.41%), melanocytic lesions (1.28%), sweat gland diseases (1.23%), tumors-cysts (1.03%), vascular malformations (0.68%), nail diseases (0.58%), genodermatoses (0.48%), and vasculitis (0.15%), respectively. The high prevalence of eczematous and infectious dermatoses were attributed to the crowded family structure, low socio-economic status, play and cleaning materials, and poor hygiene. The relatively low prevalence of atopic dermatitis in our study has been associated with increased breastfeeding in infancy and feeding with natural products in the region.

**Keywords:** Epidemiology, pediatric dermatology, skin

## Introduction

Skin diseases are an increasing health problem at the present time. The frequency of skin diseases is quite high also in pediatric population. Environmental, geographical, and socio-economic factors play an important role on the frequency of skin diseases in pediatric population [1,2]. The Southeastern Anatolia region of Turkey has unique characteristics with its geographic conditions, customs, and traditions. The west and east regions of Turkey are very different in terms of cultural and socio-economic features and majority of the reported studies about skin diseases are from the west regions of Turkey.

To our best knowledge, there is no study involving skin diseases of pediatric population from the Southeastern Anatolia region. We aimed to evaluate the prevalence of skin diseases of the pediatric population in the Southeastern Anatolia and contribute to the existing epidemiological data.

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## Materials and Methods

A cross-sectional study was conducted on 3957 patients, age range 0-17 years, between January 2012 and January 2013 in the Dermatology Outpatient Clinic of Sanliurfa Ceylanpinar State Hospital, Turkey. Ethic Committee approval was obtained prior to the study from local Ethic Committee of Sanlıurfa Harran University Medical School. Data of patients were obtained from the hospital records and investigated retrospectively.

Laboratory tests, dermoscopy, Wood light examination, radiological examination, direct fungal microscopy, punch biopsy, prick test, and patch tests were used for the diagnoses of the skin diseases.

The patients were classified according to the age groups: infancy (0-2 years), preschool period (3-5 years), school period (6-11 years), and adolescent period (12-17 years) [3]. Firstly, skin diseases were divided into 17 disease subgroups: papulosquamous diseases, eczematous diseases, acne, infectious diseases, urticaria, pigmentation disorders, vascular malformations, melanocytic lesions, hair diseases, nail diseases, vasculitis, genodermatoses,

tumors-cysts, sweat gland diseases, xerosis cutis, photodermatoses, and other-unclassified. And then, these 17 subgroups were divided into the subgroups involving 62 skin diseases.

"SPSS 17.0 Software" was used for statistical analysis of the study. Percentage, distribution, and mean values of the data were evaluated.

## Results

Of 3957 pediatric patients, 2109 (53.29%) were female and 1848 (46.71%) were male. According to the age periods, 695 (17.56%) were in infancy, 465 (11.75%) were in preschool period, 823 (20.8%) were in school period, and 1974 (49.89%) were in adolescent period.

Among the disease subgroups, eczematous diseases (30.12%) were the most common skin disease group, followed by acne (26.35%), infectious diseases (19.03%) (Figure 1a-1b), pigmentation disorders (4.06%), other-unclassified diseases (3.58%), xerosis cutis (2.8%), urticaria (2.68%), hair diseases (2.72%), papulosquamous diseases (1.74%) (Figure 1c), photodermatoses (1.41%), melanocytic lesions (1.28%), sweat gland diseases (1.23%), tumors-cysts (1.03%), vascular malformations (0.68%), nail diseases (0.58%), genodermatoses (0.48%), and vasculitis (0.15%), respectively (Table 1). Disease distributions of the first three most common groups were shown in Table 2.

Alopecia areata, psoriasis, and vitiligo were the most common diseases among the hair diseases, papulosquamous diseases, and pigmentation disorders, respectively. In the genodermatosis group, neurofibromatosis (0.05%) (Figure 1d), ichthyosis (0.38%), and epidermolysis bullosa (0.05%) were observed. The other-unclassified disease group involved mastocytosis, recurrent aphthous stomatitis, striae distensae, erythema multiforme, and morphea. Prevalence rates of the most common 10 skin diseases in the studies performed in Turkey were summarized in Table 3.


**Figure 1 (a)** A 13-year-old girl with multiple small, papular lesions with central ulcer on the nose and atrophic scar on the cheek (Leishmania cutis). **(b)** Severe inflammatory lesion with pustules and discharge on the scalp in a 12- year-old boy (Tinea capitis profunda). **(c)** A 2-year-old boy with multiple erythemato-squamous plaques on the lower extremities (Psoriasis vulgaris). **(d)** Multiple café-au-lait spots on the back, thigh, and lower extremities in a 7-year-old girl (Neurofibromatosis type 1)


**Table 1.** Prevalence rates of the disease subtypes according to the age periods

| Disease subtypes | 0-2 years n (%) | 3-5 years n (%) | 6-11 years n (%) | 12-17 years n (%) | Total n (%) |
|---|---|---|---|---|---|
| **Eczematous dermatoses** | 395 (33.14) | 176 (14.77) | 281 (23.57) | 340 (28.52) | 1192 (30.12) |
| **Acne** | 19 (0.48) | 0 (0.00) | 27 (0.68) | 997 (25.19) | 1043 (26.35) |
| **Infectious dermatoses** | 78 (1.97) | 130 (3.28) | 229 (5.79) | 316 (7.99) | 753 (19.03) |
| **Pigmentation disorders** | 14 (0.35) | 27 (0.68) | 59 (1.49) | 61 (1.54) | 161 (4.06) |
| **Other-unclassified** | 39 (0.98) | 36 (0.91) | 39 (0.98) | 28 (0.71) | 142 (3.58) |
| **Xerosis cutis** | 24 (0.61) | 21 (0.53) | 29 (0.73) | 37 (0.93) | 111 (2.80) |
| **Hair diseases** | 10 (0.25) | 18 (0.45) | 34 (0.86) | 46 (1.16) | 108 (2.72) |
| **Urticaria** | 28 (0.71) | 21 (0.53) | 26 (0.66) | 31 (0.78) | 106 (2.68) |
| **Papulosquamous diseases** | 2 (0.05) | 6 (0.15) | 32 (0.81) | 29 (0.73) | 69 (1.74) |
| **Photodermatoses** | 18 (0.46) | 8 (0.20) | 14 (0.35) | 16 (0.40) | 56 (1.41) |
| **Melanocytic diseases** | 3 (0.07) | 3 (0.07) | 19 (0.48) | 26 (0.66) | 51 (1.28) |
| **Sweat gland diseases** | 30 (0.75) | 2 (0.05) | 10 (0.25) | 7 (0.18) | 49 (1.23) |
| **Tumors-cysts** | 5 (0.13) | 8 (0.20) | 9 (0.22) | 19 (0.48) | 41 (1.03) |
| **Vascular malformations** | 17 (0.43) | 1 (0.02) | 4 (0.10) | 5 (0.13) | 27 (0.68) |
| **Nail diseases** | 6 (0.15) | 5 (0.13) | 3 (0.07) | 9 (0.23) | 23 (0.58) |
| **Genodermatoses** | 4 (0.10) | 3 (0.07) | 7 (0.18) | 5 (0.13) | 19 (0.48) |
| **Vasculitis** | 3 (0.07) | 0 (0.00) | 1 (0.02) | 2 (0.05) | 6 (0.15) |

**Table 2.** Prevalence rates of the diseases of the three most common disease groups

| Diseases | n | % |
|---|---|---|
| **Eczematous dermatoses** | **1192** | **30.12** |
| Contact dermatitis | 409 | 10.33 |
| Atopic dermatitis | 326 | 8.23 |
| Seborrheic dermatitis | 247 | 6.24 |
| Diaper dermatitis | 81 | 2.04 |
| Nummular dermatitis | 81 | 2.04 |
| Neurodermatitis | 40 | 1.01 |
| Dyshidrosis | 8 | 0.20 |
| **Acne** | **1043** | **26.35** |
| Acne vulgaris | 997 | 25.19 |
| Prepubertal acne | 27 | 0.68 |
| Infantile acne | 19 | 0.48 |
| **Infectious dermatoses** | **753** | **19.03** |
| Viral | 392 | 9.90 |
| Fungal | 199 | 5.02 |
| Bacterial | 146 | 3.68 |
| Parasitic | 16 | 0.40 |

**Table 3.** Prevalence rates of the most common 10 skin diseases in the studies performed in Turkey

| | | The frequency order (%) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Authors** | **Location** | **1.(%)** | **2.(%)** | **3.(%)** | **4.(%)** | **5.(%)** | **6.(%)** | **7.(%)** | **8.(%)** | **9.(%)** | **10.(%)** |
| Polat et al. 1 | Bolu | Infectious (26.9) | Eczematous (20.1) | Other (17.3) | Acne (15.7) | Nevus and hamartoma (5.7) | Erythematous-squamous (4.4) | Urticaria (3.5) | Hair diseases (2.5) | Nail diseases (2.2) | Vitiligo (1.2) |
| Can et al.3 | Istanbul | Eczematous (32.7) | Other (28.5) | Infectious (13.4) | Erythematous-squamous (5.5) | Nevus and hamartoma (5.4) | Hair diseases (3.8) | Acne (3.5) | Urticaria (3.2) | Vitiligo (2.2) | Nail diseases (2.2) |
| Seckin et al.7 | Tokat | Eczematous (27.0) | Infectious (22.0) | Acne (15.7) | Other (11.1) | Erythematous-squamous (4.5) | Hair diseases (4.4) | Pigmentation disorders (3.4) | Nevus and hamartoma (3.0) | Urticaria (3.0) | Sweat gland diseases (2.4) |
| Bilgili et al.8 | Van | Infectious (24.5) | Eczematous (20.0) | Erythematous-squamous (6.8) | Pigmentation disorders (5.2) | Insect bite reactions (5.0) | Pruritus (4.3) | Hair diseases (4.0) | Genodermatosis (3.6) | Acne (3.5) | Pitriasis alba (2.7) |
| Kacar et al.9 | Afyon | Infectious (27.8) | Acne and follicular disorders (19.9) | Allergic skin diseases (14.4) | Eczematous (11.0) | Other (8.0) | Erythematous-squamous (4.3) | Nevus and benign tumors (4.18) | Pigmentation disorders (2.8) | Genodermatosis (1.1) | Hair and nail diseases (0.6) |
| Tekin et al.5 | Zonguldak | Eczematous (25.9) | Infectious (25.2) | Other (15.4) | Acne (11.8) | Erythematous-squamous (6.7) | Hair diseases (5.1) | Nevus and hamartoma (4.5) | Urticaria (4.0) | Vitiligo (2.0) | Nail diseases (2.0) |
| Present study | Sanliurfa | Eczematous (30.1) | Acne (26.3) | Infectious (19.0) | Pigmentation disorders (4.0) | Xerosis cutis (2.8) | Urticaria (2.7) | Hair diseases (2.6) | Papulosquamous (1.7) | Photodermato-ses (1.4) | Melanocytic lesions (1.2) |

## Discussion

Pediatric population comprises 29.4% of Turkey population according to the 2014 data of Turkish Statistical Institute [4]. Epidemiological studies involving skin diseases of pediatric populationare scarce in Turkey [1,3]. Moreover, there is no reported study about the skin diseases of the pediatric population in the Southeastern Anatolia of Turkey, which has relatively high young population.

Eczematous and infectious diseases have been reported to be more common among the pediatric population in various studies from Turkey [1,3]. In a study performed by Tekin et al. [5] eczematous diseases were the most common skin disease group among 1383 pediatric patients in Zonguldak. In our study, the prevalence of eczematous diseases were also quite high (32.7%). This group involved contact dermatitis, atopic dermatitis, and seborrheic dermatitis, respectively. Although the frequency of atopic dermatitis is increasing according to the current literature data, we found a higher prevalence of contact dermatitis rather than atopic dermatitis. Increased breastfeeding in infancy, feeding with natural products, and avoiding from fast foods may reduce the frequency of atopic dermatitis. In addition, play materials such as soil and cleaning materials using for hand and surfaces may be responsible for the high rate of contact dermatitis in this region.

Acne vulgaris is seen in adolescents with 85% frequency and the mean onset age of acne vulgaris is 11 years for men and 12 years for women [6]. The prevalence of acne was found about 15% in the various studies reported from Turkey [1,7]. In the current

study, acne was the second common disease group with 26.35% prevalence. This relatively high prevalence of acne was attributed to the fact that we had a high number of patients with adolescent period (nearly half of the study population).

Infectious diseases group is also one of the common disease groups in the pediatric population. In several studies from Turkey, infectious dermatoses have been reported as the most common disease group [8,9]. In our study, this group was the third common disease group that viral infections was the most common of this group with 392 patients. We noticed that prevalence of the viral infections were high in the school and adolescent periods compatible with the possibility of increased close contact. Following viral infections, fungal and bacterial infections were observed, respectively. We think that a crowded family life, increased animal contacts, and low socio-economic status may enhance the frequency of infectious diseases in the study population.

Leishmaniasis is endemic particularly in some regions of Turkey. Between 1990 and 2010, 46003 leishmania cases have been reported and 96% of them were detected in the provinces of the South and Southeastern Anatolia regions such as Sanliurfa, Adana, Osmaniye, Hatay, Diyarbakir, Icel, and Kahramanmaras. In a study performed in Turkey, 29007 students were examined and 45 new leishmania cases (0.15%) were found [10]. We found a similar leishmaniasis prevalence (0.15%) in our study. It has stated that the improvement of infrastructure failure, pesticide applications, elimination of organic waste, using mosquito nets, and vaccination can be preventive for leishmaniasis [10-12].

Inanir et al [13] compared skin diseases of 2 student groups with different socio-economic levels and found that the frequency of pityriasis alba was higher in the group with low socio-economic level. They stated that the parameters demonstrating low socio-economic status such as monthly income, health insurance, and education status of family members are closely related to parasitic infections, bacterial infections, and pityriasis alba. Similarly, pityriasis alba was the most common disease among the pigmentation disorders compatible with the low socio-economic level in our study.

Among papulosquamous diseases, psoriasis is seen in the 25% of the patients before 15 years. Psoriasis has two subtypes; whereas type 2 is a relatively mild form observed in the elderly, type 1 is a severe form observed in young people [14]. Tamer et al [15] have reported the psoriasis prevalence as 3.1% in the pediatric population. In our study, psoriasis was the most common disease in the papulosquamous disease group with the increased frequency in school period.

In conclusion, eczematous diseases group was the most common disease group in our study, and followed by acne and infectious dermatoses. The high prevalence rates of eczematous and infectious dermatoses in the pediatric population were attributed to the crowded family structure, play and cleaning materials, low socio-economic status, and poor hygiene in this region. The relatively lower prevalence of atopic dermatitis was associated that with increased breastfeeding in infancy and feeding with natural products rather than fast foods. To our best knowledge, this is the first study investigating skin diseases of the pediatric population with a quite high number of participants in the Southeastern Anatolia, Turkey. We think our results will contribute to the existing epidemiological data in the literature.

**Competing interests**
*The authors declare that they have no competing interest.*

**Financial Disclosure**
*There are no financial supports.*

**Ethical approval**
*Ethic Committee approval was obtained prior to the study from local Ethic Committee of Sanliurfa Harran University Medical School. Data of patients were obtained from the hospital records and investigated retrospectively.*

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