

## Frequency of Childhood Dermatological Diseases: An Analysis of 8551 Cases

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### Abstract

**Background:** The epidemiology of dermatological diseases seen in pediatric age group is not only important in aspect of pediatric dermatology but also important in preventive health services. Retrospective and epidemiological studies on this topic, in Turkey, involved limited amount of patients. Changing social, environmental factors and developing health services made the repetition of the epidemiological studies meaningful.

**Material and Methods:** The age, gender and diagnosis of 8551 patients who were younger than 17 years of age and admitted to our hospital's out-patients' clinic in the first half of 2013 were retrospectively analyzed using the data processing system of the hospital.

**Results:** According to our results, acne vulgaris (18,6%) was the most common disease followed by warts (17,6%), atopic dermatitis (9,1%), contact dermatitis (6,2%) and seborrheic dermatitis (4,7%). In infantile age group contact dermatitis, in pre-school and school age groups warts and in adolescent age group acne vulgaris was most commonly seen. In females acne vulgaris, in males warts were the leading diagnosis.

**Conclusion:** As a result our study, which seems to include the most numerous patients among all Turkish studies, has similar results to that of the previous retrospective ones in the literature. However our results are different when compared with previous prospective and epidemiological studies. As we think that the frequency of childhood dermatological diseases is important both for pediatric dermatology and community health we esteem that the results of our study must be compared to other studies concerning our region.

### Introduction

Dermatological problems are common in children as in adults. Dermatological diseases seen in children are different than that of adults [1, 2]. This difference can be primarily due to the developing skin from new-born period to adolescence. Additionally variability in the immune and endocrine systems and environmental factors like school may be the cause of this diversity, frequency and the

**Table 1.** Demographic Properties of the Patients

	n / %	Mean Age	0-2 years	3-5 years	6-11 years	12-16 years
<b>Female</b>	4574 %53.5	10.57± 3,4	254	500	1447	2373
<b>Male</b>	3977 %46.5	10.06± 2,6	296	506	1316	1859
<b>Total</b>	8551 100%	10.34± 4,4	550	1006	2763	4232
			% 6.4	11,80%	% 32.3	% 49.5

**Table 2.** Dermatological Diseases and Frequencies

<b>Dermatitis'</b>	<b>2357 / % 27.5</b>
Atopic dermatitis	783
Contact dermatitis	536
Seborrheic dermatitis	402
Dermatitis, other	352
Pityriasis alba	96
Nummular dermatitis	52
Intertriginous dermatitis	34
Lichen simplex chronicus	29
Photocontact dermatitis	24
Dishidrotic eczema	22
Infective dermatitis	22
Factitial dermatitis	5
<b>Infectious Skin Diseases</b>	<b>2278 / % 26.6</b>
Warts,	1509
Impetigo	173
Insect bites	101
Molluscum contagiosum	80
Herpes simplex infection	65
Tinea corporis	64
Pityriasis versicolor	59
Herpes zoster	37
Tinea unguium	32
Varicella zoster	28
Tinea capitis	26
Tinea pedis	17
Other viral exanthems	17
Candidiasis	12
Paronychia	13
Scabies	12
Pediculosis capitis	12
Tinea cruris	6
Abcess, furunculosis	6
Tinea manuum	5
Celülitis	3
Cutaneous leishmaniasis	1
<b>Acne and similar skin disorders</b>	<b>1618/%18.9</b>
Acne vulgaris	1591
Acne rosacea	16
Perioral dermatitis	11
<b>Erythematous-squamous skin disorders</b>	<b>359/% 4.1</b>
Psoriasis	261
Pityriasis rosea	84
Lichen planus	8
Lichen nitidus	3
Pityriasis rubra pilaris	2
Lichen striatus	1
<b>Benign and malign skin disorders</b>	<b>352/% 4.1</b>
Melanocytic nevus	94
Cheloid scar	57
Soft fibroma	56
Hemangioma	54
Atrophic stria	28
Dermal cyst	16
Pyogenic granuloma	13
Epidermal cyst	12
Soft tissue hamartoma	6
Lipoma	4
Seborrheic keratosis	3
Epidermal hyperplasia	3
Mycosis fungoides	2
Mastositosis	1

**Table 2.** Dermatological Diseases and Frequencies (Continued)

Acanthosis nigricans	1
Actinic keratosis	1
Lymphangioma	1
<b>Xerosis cutis</b>	<b>328/% 3.8</b>
<b>Hair Disorders</b>	<b>295/% 3.4</b>
Alopecia areata	181
Telogen effluvium	74
Telogen effluvium due to zinc deficiency	11
Hirsutism	20
Androgenetic alopecia	4
Scarring alopecia	4
Trichotillomania	1
<b>Pigmentation Disorders</b>	<b>261/% 3</b>
Vitiligo	147
Post inflammatory hyperpigmentation	54
Freckles	52
Leukoderma	8
<b>Allergic Disorders</b>	<b>192/% 2.2</b>
Urticaria, angioedema	169
Drug rash	17
Polymorphic light eruption	6
<b>Skin Disorders due to Trauma and Environment</b>	<b>125/% 1.4</b>
Callus	48
Ingrown toe nails	39
Burns	28
Ecchymosis	5
Pernio	3
Foreign substance in skin	2
<b>Prurigo, pruritus</b>	<b>80/%0.9</b>
<b>Vascular disorders of the skin and collagen tissue</b>	<b>79/% 0.9</b>
Telangiectasia	39
Vasculitis limited to skin	9
Behçet's Disease	5
Localized morphea	6
Erythema multiforme	6
Pigmented purpuric dermatosis	4
Erythema nodosum	3
Raynaud syndrome	2
Idiopathic thrombocytopenic purpura	1
Livedoid vasculitis	1
Discoid lupus erythematosus	1
Calcinosis cutis	1
Erythema annulare centrifugum	1
<b>Nail dystrophic disorders</b>	<b>72/% 0.8</b>
<b>Genetic skin disorders</b>	<b>67/% 0.7</b>
Ichthyosis vulgaris	22
Keratosis pilaris	21
Palmoplantar keratoderma	14
Epidermolysis bullosa	5
Tuberous sclerosis	3
Neurofibromatosis	2
<b>Oral mucosa disorders</b>	<b>46/% 0.5</b>
Recurrent aphthous stomatitis	39
Cheilitis	4
Stomatitis	2
Acute gingivitis	1
<b>Hyperhidrosis</b>	<b>23/% 0.2</b>
<b>Granuloma annulare</b>	<b>7/% 0,08</b>
<b>Bullous skin disorders</b>	<b>5/% 0.05</b>
<b>Lichen sclerosus atrophicus</b>	<b>3/% 0.003</b>
<b>Miliaria</b>	<b>4/% 0.004</b>
<b>Total</b>	<b>8551/% 100</b>

**Table 3.** Distrubition of the Dermatological Diseases Which Have a Frequency ≥ 1% According to Age Groups

	0-2 years	3-5 years	6-11 years	12-16 years
Acne vulgaris	-	2 / % 0,2	52 / % 2,4	1537 / % 44,9
Warts	9 / % 2,2	189 / % 24,7	628 / % 29,4	683 / % 19,9
Atopic dermatitis	85 / % 20,7	129 / % 16,9	344 / % 16,1	225 / % 6,5
Contact dermatitis	163 / % 39,8	138 / % 18	176 / % 8,2	59 / % 1,7
Seborrheic dermatitis	29 / % 7	33 / % 4,3	139 / % 6,5	201 / % 5,8
Dermatitis, other	32 / % 7,8	63 / % 8,2	133 / % 6,2	124 / % 3,6
Xerosis	30 / % 7,3	59 / % 7,7	138 / % 6,4	101 / % 2,9
Psoriasis vulgaris	4 / % 0,9	16 / % 2	134 / % 6,2	107 / % 3,1
Impetigo	24 / % 5,8	31 / % 4	58 / % 2,7	60 / % 1,7
Alopecia areata	6 / % 1,4	30 / % 3,9	78 / % 3,6	67 / % 1,9
Urticaria	9 / % 2,2	19 / % 2,4	70 / % 3,2	71 / % 2
Vitiligo	7 / % 1,7	10 / % 1,3	65 / % 3	65 / % 1,9
Insect bites	9 / % 2,2	23 / % 3	41 / % 1,9	28 / % 0,8
Pityriasiss alba	-	14 / % 1,8	49 / % 2,2	33 / % 0,9
Melanocytic nevus	2 / % 0,4	7 / % 0,9	26 / % 1,2	59 / % 1,7
	<b>409 / % 100</b>	<b>763 / % 100</b>	<b>2131 / % 100</b>	<b>3420 / % 100</b>

**Table 4.** Most Common Five Dermatological Diseases In Age Groups

0-2 years	3-5 years	6-11 years	12-16 years
Contact dermatitis / %39,8	Warts / %24,7	Warts / %29,4	Acne vulgaris / %44,9
Atopic dermatitis / %20,7	Contact dermatitis / %18	Atopic dermatitis / %16,1	Warts / %19,9
Dermatitis, other / %7,8	Atopic dermatitis / %16,9	Contact dermatitis / %8,2	Atopic dermatitis / %6,5
Xerosis / %7,3	Dermatitis, other / %8,7	Seborrheic dermatitis / %6,5	Seborrheic dermatitis / %5,8
Seborrheic dermatitis / %7	Xerosis / %8,2	Xerosis / % 6,4	Contact dermatitis / % 3,6

prognosis of the diseases [3, 4, 5]. There are two other facts that must be emphasized. Some dermatological diseases mostly observed in early childhood stages which comes to mind that genetical tendency exists. And secondly congenital skin diseases are usually diagnosed in childhood [6, 7]. Besides all these, frequency of the dermatological diseases seen in pediatric age group and evaluation of the demographic properties of the patients is important in case of treatment and preventive health services [8]. In the previous retrospective studies from Turkey limited number of patients were evaluated. There are no studies with high number of participants on this subject. Just a few narrow-scoped epidemiological studies can be found [4, 9, 10, 11, 12, 13, 14, 15, 16, 17]. On the other hand changing social and environmental factors and the dynamics of the developing health services made the repetition of the epidemiological studies necessary and valuable as time passed. Also declaration of current regional data on pediatric dermatological

diseases will be a step in the accumulation of knowledge to be complete [1].

Kayseri Education and Research Hospital where we conducted our study is located in mid Anatolian part of Turkey. It provides health service to neighboring seven cities. In the hospital's dermatology out-patients' clinic 600-900 patients, child and adult, are examined daily. In this study, diseases and the demographic properties of the children admitted to our hospital are searched.

**Material and Methods**

The age, gender and disease properties of 8551 patients younger than 17 years of age who admitted to Kayseri Education and Research Hospital in the first half of 2013 were analyzed retrospectively using the hospital's data processing system. Patients were divided into four groups according to their ages; infant (age 0-2), pre-school (age 3-5), school (age 6-11), adolescent (age 12-16).

**Table 5.** Distrubition of The Dermatological Diseases Which Have a Frequency ≥ 1% According to Gender

	Female (n/%)	Male (n/%)
Acne vulgaris	977 / % 26,8	614 / % 19,9
Warts	792 / % 21,7	717 / % 23,2
Atopic dermatitis	390 / % 10,6	393 / % 12,7
Contact dermatitis	245 / % 6,7	291 / % 9,4
Seborrheic dermatitis	268 / % 7,3	134 / % 4,3
Dermatitis, other	184 / % 5	168 / % 5,4
Xerosis	176 / % 4,8	152 / % 4,9
Psoriasis vulgaris	156 / % 4,2	105 / % 3,4
Impetigo	95 / % 2,6	78 / % 2,5
Alopecia areata	64 / % 1,7	117 / % 3,8
Urticaria	87 / % 2,3	82 / % 2,6
Vitiligo	71 / % 1,9	76 / % 2,4
Insect bites	59 / % 1,6	42 / % 1,3
Pityriasis alba	29 / % 0,7	67 / % 2,1
Melanocytic nevus	52 / % 1,4	42 / % 1,3
	<b>3645 / % 100</b>	<b>3078 / % 100</b>

**Table 6.** Most Common Dermatological Disease In Different Genders

Female	Male
Acne vulgaris / % 26,8	Warts / % 23,02
Warts / % 21,7	Acne vulgaris / % 19,9
Atopic dermatitis / % 10,6	Atopic dermatitis / % 12,7
Seborrheic dermatitis / % 7,3	Contact dermatitis / % 9,4
Contact dermatitis / % 6,7	Dermatitis, other / % 5,4

Patients were physically examined by the dermatologists and if necessary mycological and other laboratory tests and skin biopsies were carried out to make the proper diagnosis. 107 different dermatological diseases are examined in 16 main groups.

The data is analyzed using the SPSS version 17.0 (SPSS Software, Chicago, IL, USA) The distribution of the age and gender of the patients, the frequency of the dermatological diseases in 16 main groups which have a rate more than 1% are analyzed according to age groups and gender.

**Results**

The information of 8551 patients who are younger than 17 is analyzed. 4574 of the patients were (53,5%) female and 3977 were (46,5%) male. The mean age of the patients was 10,34±4,4. For females and males it was sequentially 10,57±3,4 and 10,06±2,6. The number of the patients in the infant group was 550 (6,4%), in the pre-school group 1006 (11,8%), in the school group 2763 (32,3%) and in the adolescent group 4232 (49,5%) (Table 1). The crowddest group according to age was the adolescent group (49,5%). The distribution of the

patients according to gender in different age groups is shown in Table 1. In the infant and pre-school age groups males are predominant where as in the other two groups females are (Table 1).

107 different dermatological diseases were determined (Table 2). Among all, acne vulgaris (18,6%) was the most common. It was followed by warts (17,6%), atopic dermatitis (9,1%), contact dermatitis (6,2%) and seborrheic dermatitis (4,7%) sequentially. The frequencies of the other diseases are shown in Table 2.

Fifteen dermatological diseases which have a rate bigger than 1% among dermatological diseases are shown in different age groups (Table 3). Also the most common five diseases in each age group are shown in Table 4. In the infant age group contact dermatitis, in the pre-school age group and school age group warts and finally in the adolescent age group acne vulgaris was the most commonly seen disease (Table 4).

Fifteen dermatological diseases which have a rate bigger than 1% among dermatological diseases are shown according to gender (Table 5). Additionally the most common five diseases in both gender are shown in Table 6. In females acne vulgaris is the leading disease where as it is warts in males (Table 6).

**Table 7.** Comparison of The Turkish Studies On Dermatological Diseases Seen In Childhood

Study	n	type	Dermatological diseases in order of frequency
Oztas et al. 13, 2001	173	E	Pediculosis Capitis, Napkin dermatitis, Contact dermatitis
Oruk et al. 15, 2002	1276	R	Allergic problems, Viral skin disorders
Inanır et al. 17, 2002	785	E	Nevi, Keratozis pylaris, Xerosis
Serarslan et al. 16, 2005	185	E	Pityriasis alba, Viral skin disorders, Acne vulgaris, Contact dermatitis
Tuncel et al. 12, 2005	682	R	Tinea pedis, Acne vulgaris, Tines unguium
Tekin et al. 14, 2007	1383	R	Dermatitis', Viral skin disorders, Acne vulgaris
Tamer et al. 9, 2008	6300	R	Acne vulgaris, Atopic dermatitis, Contact dermatit, Viral skin disorders
Cicek et al. 4, 2008	3244	R	Viral skin disorders, Atopic dermatitis, Acne vulgaris, Other dermatitis'
Gul et al. 10, 2008	2370	R	Viral skin disorders, Contact dermatitis, Fungal infections
Polat et al. 1, 2008	624	R	Acne vulgaris, Viral skin disorders, Atopic dermatitis
Can et al. 11, 2011	850	R	Atopic dermatitis, Contact dermatitis, Viral skin disorders
Current study	8551	R	Acne vulgaris, Viral skin disorders, Atopic dermatitis, Contact dermatitis

E: Epidemiological study, R: Retrospective study

## Discussion

Most of the studies about the frequency of the dermatological diseases in children are retrospective ones designed by using the hospital records like ours [4, 9, 10, 11, 12, 14, 15]. Additionally a few epidemiological ones exist [13, 16, 17]. In Table 7 both retrospective and epidemiological studies from Turkey are summarized. The differences between the results of retrospective, epidemiological and prospective studies are obvious. In the retrospective analysis, as in our study, acne vulgaris, dermatitis' and warts are the leading diseases where as in the epidemiological studies pediculosis, nevi and pityriasis alba are the most common ones (Table 7). Pediculosis capitis, dermatitis and pityriasis alba were the most common diseases in two different epidemiological studies containing 17967 and 2194 subjects respectively in 2012 which held outside Turkey [18, 19]. In another retrospective study from outside of Turkey containing 3049 subjects again warts and dermatitis were the most common problems, similar to the results of the previous retrospective Turkish studies [20]. In the studies which originate from hospital data the study features from the patients' reason of admission. But in epidemiological studies sometimes the diseases that the subjects do not mind or even do not realize are brought in to the forefront. Besides patients who cannot receive health services for any reason must be taken into consideration. This difference reveals that

preventive health services are as much important as the planning of the health services [18]. Somehow dermatological conditions that are not treated in hospitals must be included in the studies.

When the frequency of the dermatological diseases studied in different age groups, our study showed that in the infant age group dermatitis' and in the adolescent age group acne vulgaris are the most common diseases which are compatible with the previous studies [9, 11]. We examined mostly warts in pre-school and school age groups where as in the previous studies it was dermatitis [9, 11].

In a study from Ethiopia in 2012, containing 17967 subjects, most common dermatological diseases were infections and infestations (47%) [18]. In our study this rate was 26,6%. Acne vulgaris was observed in 18,6% in our study, whereas 8,3% in the Ethiopian one [18].

The result of our study showed that acne vulgaris is the most common disease in females and warts are the most common in males. A study from Turkey in 2008 showed that the most common disease in females was also acne vulgaris but in males atopic dermatitis instead. When our study is compared with a prospective study of 10000 subjects [21] the distribution of the diseases in different age groups show variability. In this study the frequencies of both warts and atopic dermatitis were similar in males and females where as

in our study both of the diseases were more common in males [21]. In this study vitiligo was more common in females but in ours vice versa [21]. This contrast was seen also for seborrheic dermatitis which was more common in our study. In both studies similarly psoriasis was more common in females and pityriasis alba was more common in males [21].

As understood from these results there are similarities and differences between studies. International or interregional differences in socioeconomic status is the first reason to come into mind but number of the patients in the studies and the method of the studies must also be considered. That's why both comparison of the studies from different regions with same methods and retrospective, prospective and epidemiological studies in the same region are important.

As a result, our study which is so far the largest of all reported from Turkey, has results similar to those of the previous retrospective studies. But there are differences when compared with prospective and epidemiological studies. As we think the frequencies of childhood dermatological diseases are important for pediatric dermatology and community health the results of our study must be compared with other epidemiological studies in our region.

Conflict of interest: There is no conflict of interest.

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