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## Prevalence and related factors of psoriasis and seborrheic dermatitis: a community based study

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## Prevalence and related factors of psoriasis and seborrheic dermatitis: a community-based study

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**Background/aim:** We aimed to determine the prevalence of psoriasis (PS) and seborrheic dermatitis (SD) (erythematous-squamous diseases) in our region and reveal the frequently encountered associated factors to aid in planning appropriate healthcare.

**Materials and methods:** A community-based study was conducted with 85 sample groups that reflected the population rate and demography of Tokat Province in northern Anatolia.

**Results:** In this community, the prevalence of PS in people older than 20 years of age was 1.2% and the prevalence of SD was 5.2%. SD rates were higher in patients who used tobacco and especially alcohol. SD prevalence was also higher in patients treated for depression and epilepsy. Furthermore, as education levels increased, SD prevalence increased proportionally.

**Conclusion:** In general, PS prevalence in this region was higher than in Asia and Africa but lower than in Europe and the United States. Whereas SD prevalence varies between 2% and 12% throughout the world, the average SD prevalence was 5.2% in this study.

**Key words:** Prevalence, psoriasis, seborrheic dermatitis

### 1. Introduction

Psoriasis (PS) and seborrheic dermatitis (SD) are chronic erythematous-squamous diseases commonly encountered in the community, whose etiology cannot be precisely explained. Although both diseases have benign progression, important pathologies impair the quality of life and affect the social life of the patient (1,2).

It is known that racial, geographic, and environmental factors affect papulosquamous diseases (3–9). The following have not been correlated with disease etiology but have been presented in several studies: the relationship of these diseases with demographic information such as age, sex, educational status, marital status, and residential area; common chronic diseases in the community such as hypertension (HT), coronary heart disease (CHD), diabetes mellitus (DM), and chronic renal failure (CRF); important pathologies such as obesity and stress; and common habits in the community such as the use of tobacco and alcohol (10–16). In this study, we aimed to determine the prevalence of these erythematous-squamous diseases in a region in Turkey and to reveal the frequently encountered

associated factors, with the purpose of aiding in planning appropriate healthcare.

### 2. Material and methods

A community-based study was conducted in all 12 districts and rural areas of Tokat Province in Turkey between September 2012 and June 2013. Because all citizens are registered in the family medicine system, this system was selected as the baseline for the study. Based on 85 (50%) of the 170 family medicine departments in Tokat Province, 85 sample groups (52 urban, 33 rural) were created. The number of family medicine departments and the number of people included from each department was determined through a multistage proportional cluster sampling method that considered age, sex, and size of rural and urban populations in the province and districts of Tokat's general population pyramid. The volunteer participants were randomly selected among individuals undergoing follow-up at family medicine departments. Only patients aged 20 and over were included in the study. In the same sample group, at most two first-degree relatives were

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included. The participants' demographic factors, medical history, family history, anthropometry, alcoholic beverage consumption, and tobacco use were recorded. Body mass index (BMI) was calculated as weight (kg) / height (m<sup>2</sup>). The participants were evaluated according to three age groups: 20–35, 36–65, and 65 years and over. PS and SD were diagnosed clinically by a dermatology specialist. The psoriasis area severity index (PASI) was used to determine the severity of each participant's psoriasis. In this study, PASI scores below 7 were low, scores between 7 and 12 were medium, and scores over 12 were severe. To score SD, the value of scaling, inflammation, and itching was determined (0 = none, 1 = slight, 2 = mild, 3 = moderate, 4 = pronounced, and 5 = severe). Total scores between 2 and 4 were classified as slight, 5–7 were mild, 8–10 were moderate, 11–13 were pronounced, and 14–15 were severe.

The data were evaluated by computer and  $P < 0.05$  was accepted as significant.

### 3. Results

A total of 2428 individuals were interviewed, of which 2325 participants were included in the study (1290 females and 1035 males). The age of the participants varied between 20 and 87 years (average age:  $47.3 \pm 15.3$ ; females:  $46.6 \pm 15.3$ , males:  $48 \pm 15.4$ ).

In the study, PS was diagnosed in 28 (15 women, 53.5%; 13 men, 46.5%) individuals, and the prevalence of PS in the community was 1.2%. No statistically significant difference between sexes was determined ( $P \geq 0.05$ ). When the age groups were analyzed, the disease was more common in adults of both sexes ( $P = 0.003$ ). Psoriasis vulgaris was determined in 27 patients, and palmoplantar pustular psoriasis was determined in only one patient. When family history was analyzed, psoriasis was present in first-degree relatives of 3 (10.7%) patients with PS. Most patients had already been diagnosed with PS, and the time since diagnosis varied between 1 and 45 years (average: 15 years). The average age of onset for the disease was 33

years. A new diagnosis was established for only one patient with few symptoms. Nail involvement was present in 25% ( $n = 7$ ) of the patients, and nail lesions are given in Table 1. Joint involvement history was obtained in only one patient. PS lesions were located mostly (64.2%) in the knee-elbow regions (Table 1). The patients' PASI was 7 and lower in 64% ( $n = 18$ ), between 7 and 12 in 25% ( $n = 7$ ), and 12 and over in 11% ( $n = 3$ ). No significant relationship was determined between the PASI score and other factors ( $P \geq 0.05$ ). The relationship of the disease with demographic information, common chronic diseases, BMI, and tobacco and alcohol use is presented in Table 2.

SD was determined in 122 (59 women, 48.4%; 63 men, 51.6%) individuals in the study, and SD prevalence in the community was 5.2%. The prevalence in men (6.1%) was higher than in women (4.6%); however, no statistically significant difference was observed ( $P = 0.104$ ). When the age groups were analyzed, the disease was encountered in younger ages ( $P = 0.032$ ). The scalp was the most affected area (94.1%). Other lesion locations, severity score of the disease, and frequency of attacks are presented in Table 3. No significant relationship was determined between the severity of the disease and other factors ( $P \geq 0.05$ ). When the relationship of SD with chronic diseases was analyzed, SD at a high rate was present in 9 (11.1%) of the 81 patients with depression ( $P = 0.016$ ) and 3 (18.8%) of 13 patients diagnosed with epilepsy ( $P = 0.015$ ); these rates were statistically significant. No significant relationship was determined with other common diseases ( $P \geq 0.05$ ). As the level of education increased, the prevalence of the disease significantly increased (illiterate, 3.6%; elementary education graduates, 4.8%; high school graduates, 7.1%; university graduates, 9%) ( $P = 0.038$ ). The rate was 4.8% in participants who responded "no" to the question of whether they consume alcohol, 10% for participants who responded "sometimes," and 8% for participants who responded "yes"; a statistically significant difference was observed between the participants who consume and do not consume alcohol ( $P = 0.011$ ). SD prevalence increased

**Table 1.** Data for patients with psoriasis.

Area, n (%)		PASI score, n (%)		Nail lesions, n (%)	
Knee-elbow	18 (64.2)	<7	18 (64)	Pitting	6 (21.4)
Scalp	17 (60.7)	7–12	7 (25)	Onycholysis	5 (17.8)
Body	14 (50)	>12	3 (11)	Splinter hemorrhages	5 (17.8)
Joint	1 (3.5)			Subungual hyperkeratosis	3 (10.7)
Palmoplantar	1 (3.5)			Discoloration	3 (10.7)
Nails	7 (25)				

**Table 2.** Summary statistics of patients with psoriasis.

Related conditions		No PS n	Yes PS		Total, n	P-value
			n	%		
Age	20–35	634	3	0.5	637	0.003
	36–65	1338	25	1.8	1363	
	66≥	325	-	-	325	
Sex	Women	1275	15	1.2	1290	NS
	Men	1022	13	1.3	1035	
Education	Illiterate	401	4	1.0	405	NS
	Elementary school	1321	16	1.2	1337	
	High school	331	5	1.5	336	
	University	210	2	0.9	212	
Marital status	Married	1883	23	1.2	1906	NS
	Single	147	1	0.7	148	
Region	Urban	1343	18	1.3	1361	NS
	Rural	954	10	1.0	964	
Smoking	No	1409	15	1.1	1424	NS
	Yes	440	6	1.3	446	
	Ex-smoker	386	6	1.5	392	
Alcohol	No	2040	24	1.2	2064	NS
	Yes	49	1	3.6	50	
	Sometimes	167	3	1.8	170	
BMI score	≤24.9	552	5	0.9	557	NS
	25–29.9	834	8	1.0	842	
	≥30	878	14	1.6	892	
DM		269	3	1.1	272	NS
HT		500	8	1.6	508	NS
CHD		146	1	0.7	147	NS
CHF		60	-	-	60	NS
Depression		80	1	1.2	81	NS
CRF		9	-	-	9	NS
SVD		15	-	-	15	NS

PS: Psoriasis; NS: not significant; BMI: body mass index; H: hypertension; CHD: coronary heart disease; CHF: coronary heart failure; DM: diabetes mellitus; CRF: chronic renal failure; SVD: cerebrovascular diseases.

with the use of tobacco; however, this was not statistically significant ( $P = 0.141$ ). The relationship of SD with other characteristics is presented in Table 4.

#### 4. Discussion

PS and its comorbidities significantly affect quality of life and the clinical results of the disease. They also have significant healthcare costs. In recent years, the relationship of many medical comorbidities, such as DM, HT, SVD, and CHD, with PS has been presented (10–14,17–19).

In this study, no significant change was observed in PS prevalence when it was evaluated with chronic diseases (Table 2). Researchers have emphasized that the frequency of chronic diseases in patients with PS has increased, and these chronic diseases have been associated with PS severity (10,11,18,19). However, no significant relationship was determined between chronic diseases and PS severity in this study. This could be due to the limited number of patients; PS prevalence was low in the community, and the patients' PASI scores were also low.

**Table 3.** Analysis of patients with seborrheic dermatitis.

Area (%)		Severity (%)		Attack (%)	
Scalp	94.1	Severe	8.7	Continuous	44.3
Auricular	47.1	Pronounced	34.5	Several times a month	26
Eyebrows	42	Moderate	22.7	Several times every 6 months	15.2
Nasolabial	41.2	Mild	19.4	Several times a year	14.3
Forehead	12.6	Slight	14.7		
Chest	10.1				
Beard and moustache	5.9				
Intertriginous areas	1.7				

**Table 4.** Summary statistics of patients with seborrheic dermatitis.

Related conditions		No SB, n	Yes SB		Total, n	P-value
			n	%		
Age	20–35	591	46	7.2	637	0.032
	36–65	1302	61	4.5	1363	
	≥66	310	15	4.6	325	
Sex	Women	1231	59	4.6	1290	0.104
	Men	972	63	6.1	1035	
Education	Illiterate	390	15	3.7	405	0.010
	Elementary school	1275	62	4.6	1337	
	High school	312	24	7.1	336	
	University	193	19	9.0	212	
Marital status	Married	1804	102	5.4	1906	NS
	Single	141	7	4.7	148	
Region	Urban	1299	62	4.6	1361	0.075
	Rural	904	60	6.2	964	
Smoking	No	1358	66	4.6	1424	0.141
	Yes	415	31	7.0	446	
	Ex-smoker	369	23	5.9	392	
Alcohol	No	1964	100	4.8	2064	0.011
	Yes	46	4	8.0	50	
	Sometimes	153	17	10.0	170	
BMI score	≤24.9	524	33	5.9	557	NS
	25–29.9	799	43	5.1	842	
	≥30	846	46	5.2	892	
DM		260	12	4.4	272	NS
HT		488	20	3.9	508	NS
CHD		141	6	4.1	147	NS
CHF		56	4	6.7	60	NS
Depression		72	9	11.1	81	0.016
Epilepsy		13	3	18.8	16	0.015

SD: Seborrheic dermatitis; NS: not significant; BMI: body mass index; HT: hypertension; CHD: coronary heart disease; CHF: coronary heart failure; DM: diabetes mellitus; CRF: chronic renal failure.

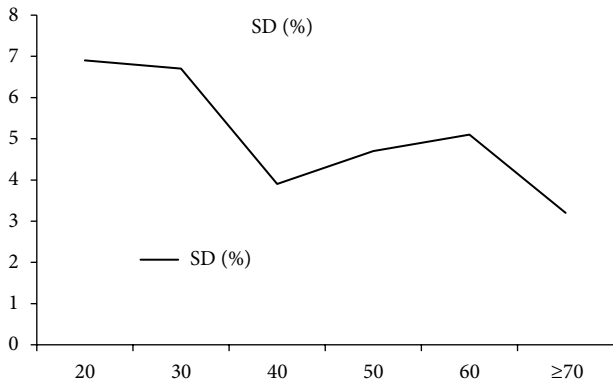
PS occurs at the same rate in both sexes (20,21). The age of disease onset is generally in the third decade; however, onset is possible at any period of life (21). In this study, the average age of disease onset was 33 years and prevalence was similar in both sexes. When evaluated according to age group, PS was prevalent in adults between 36 and 65 years in both sexes. If psoriasis history is present in the family, the possibility of the disease occurring at an earlier age is high (21,22). Whereas psoriasis frequency is 1%–2% in children without psoriasis history in their family, this rate is 10%–20% if the mother or father has psoriasis, and higher than 50% if both parents have psoriasis (21,22). In this study, psoriasis anamnesis was determined in first-degree relatives of 10.7% of the patients. Nail changes are observed in every type of psoriasis. Nail involvement frequency is nearly 50% (23). The most specific findings encountered in nails are pitting, salmon spots, onycholysis, subungual hyperkeratosis, discoloration, and splinter hemorrhages (23). In this study, nail involvement was determined in 25% of the patients, and nail findings are presented in Table 1. No significant difference was specified when the patients were compared to the community in terms of demographic features, tobacco and alcohol use, BMI score, and region of residence (Table 2).

Several studies have shown that the prevalence of psoriasis varies greatly across the world. In studies conducted in Europe, PS prevalence differed as follows: 8.5% in Norway, 5.2% in France, 3.73% in Denmark, 3.1% in Italy, 2.2% in England, and 1.21% in Croatia (24–30). When compared to our results, higher prevalence rates were determined in most studies carried out in Europe. Only the PS prevalence found in the study in Croatia was closer to the value in our study, at 1.21% (29). However, PS prevalence was lower in studies carried out in Asian countries, such as China and Taiwan (0.47%, China; 0.19%, Taiwan) (4,5). On the African continent, low prevalence rates in general and different results were determined. Whereas low PS prevalence was determined in western Sub-Saharan countries such as Ghana and Nigeria (Ghana, 0.4%; Nigeria, 0.9%), the rate was over 2% in eastern Sub-Saharan African countries (31–33). In a study carried out in the United States, PS prevalence was 3.2% (3). In the same study, when ethnic origin was evaluated, PS prevalence differed significantly: 3.6% for Caucasians, 1.9% for African-Americans, and 1.6% for Hispanics (3). PS prevalence in Turkey was higher than in Asia and Africa, and lower than in Europe and the United States. However, in countries on the same continent and even in different ethnic groups in the same country, significant proportional differences occurred. Additionally, when evaluated with all studies, genetic and environmental factors could affect PS development at different rates in different communities.

SD is a common erythematous-squamous disease. It significantly affects patients' quality of life, including social and work life, because the disease is chronic and recurs frequently (2). In this study, patients mostly mentioned that the lesions were permanent and the disease frequently recurred (Table 3). SD is associated with several neurological and psychiatric diseases such as neuroleptic-induced Parkinsonism, familial amyloidosis with polyneuropathy, tardive dyskinesia, and mood depression (16,34–36). Emotional stress also triggers SD (37). In this study, SD prevalence was significantly higher in patients who were administered treatment for epilepsy and depression (Table 4) ( $P = 0.015$ ,  $P = 0.016$ , respectively). Increased sebum accumulation based upon immobility, neurotransmitter anomalies, and the medication used to treat the diseases have been considered to play a role. However, during treatment for Parkinson disease, sebum secretion production and sometimes SD have recovered (38–41).

In the development of the disease, the role of lifestyle and nutrition can be hard to establish. In other studies, the life quality index score of patients with SD with high educational levels was worse than those of others (2,42), and in this study, as the patients' educational level increased, SD prevalence increased significantly ( $P = 0.010$ ) (Table 4). In patients with alcoholism and chronic alcoholic pancreatitis, SD is more common than in the general population (43,44). Several studies investigated the increase in lesions due to the use of tobacco and found no relationship (7,45,46). In this study, a significant difference was determined between participants who used and did not use alcohol, as a finding supporting the other studies ( $P = 0.011$ ). SD was observed more frequently in people who used tobacco than in the community, though this was not statistically significant (Table 4).

Hyperandrogenism is thought to play an important role in the etiology of SD (47,48). The significant frequency of SD in infants (due to maternal hormones) and teenagers, and the faster progression rates in men, are explained with the hyperandrogenism hypothesis (15,49). In this study, SD progressed faster in the younger group ( $P = 0.032$ ) and was more prevalent in men (4.6% females, 6.1% males). Additionally, in another study, SD was more common in obese patients, and this relationship was explained with the hyperandrogenism hypothesis (7). However, in the present study, no significant relationship was determined between BMI and SD. Moreover, one more increase was monitored after the fifth decade as noncompatible with the hyperandrogenism hypothesis in SD frequency (50,51). In this study, an increase in SD prevalence was determined after the fifth decade, although it was not statistically significant (Figure).



**Figure.** Prevalence of seborrheic dermatitis by age.

SD frequency increases during three time periods: infancy, young adulthood, and after the fifth decade (50,51) (Figure). Therefore, the age interval chosen in a study can affect SD prevalence. In Brazil, the prevalence was 11% in men of military age; in India, 11.3% in children younger

than 12; in Kuwait, 3.1% in children younger than 12; and in Singapore, 3.2% in children younger than 16 (7,9,52,53). In a similar study carried out in Australia, the prevalence in people older than 20 was high at 9.7% (8). In the United States, a low rate of 2.85% was determined between 1 and 74 years of age (54). Consequently, although the global SD prevalence varies between 2% and 12%, the SD prevalence in this study was average at 5.2% (7–9,52–54).

As far as we know, this study is the first community-based study regarding the prevalence of PS and SD in Turkey. In conclusion, PS prevalence for individuals older than 20 in the northern Anatolian community was 1.2% and SD prevalence was 5.2%. Whereas PS was more common in adults, SD was more common in the young. PS was encountered in both sexes, but SD was slightly more common in men. SD was more prevalent in individuals who used tobacco and especially alcohol. SD prevalence was higher in patients who were administered treatment for depression and epilepsy. Furthermore, as the level of education increased, SD prevalence increased proportionally.

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