ORIGINAL ARTICLE

THE PREVALENCE OF SKIN DISEASES AMONG THE ELDERLY PATIENTS APPLYING A TERTIARY DERMATOLOGY OUTPATIENT CLINIC: A RETROSPECTIVE ANALYSIS OF 2400 PATIENTS

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Abstract

Introduction: As the population ages, particular health issues affect this susceptible age group. The aim of this study was to evaluate the incidence, frequency, age, gender, and season-of-year distribution of dermatological disorders among geriatric patients.

Materials and Method: This was a retrospective, descriptive study. Skin diseases were categorized into 12 different groups and analyzed according to the age groups, gender, and season of the application.

Results: The study included 2431 patients (1203 were female and 1228 were male). The mean age of the patients was 74.02±7.07(65-100) years. For 23.1% of these patients, the problems were acute, and for 76.9%, they were chronic. The ratio of patients with one, two, and more than three complaints was 81.0%, 13.9%, and 5.1%, respectively. The most frequent diagnoses were pruritus (n=424, 17.4%); eczematous dermatitis (n=395, 16.2%); fungal infections (n=372, 15.3%); premalign and malign skin disorders (n=247, 10.2%); bacterial infections (n=147, 6%); viral infections (n=118, 4.9%); papulosquamous diseases (n=95, 3.9%); urticaria and adverse drug reactions (n=96, 3.9%); benign skin tumors (n=79, 3.2%); acneiform disorders (n=40, 1.6%); and vesiculobullous disorders (n=22, 0.9%).

Conclusion: The majority of skin diseases among the elderly are not life-threatening, and they are preventable. Knowing the prevalence and distribution of skin diseases seen in the elderly can help prevent these disorders and develop policies for better management of elderly-related health issues.

Keywords: Aged; Skin Diseases; Preventive Medicine; Skin Aging.

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INTRODUCTION

Improvements in health care and the management of chronic conditions have led to longer life expectancies, which, in addition to declining fertility rates, have contributed to population aging (1, 2). It has been estimated that by 2025, the global population will comprise approximately 1,2 billion individuals aged 60 and over, and this number is projected to increase to 1,9 billion individuals by 2050 (3).

According to the Turkish Statistical Institute, from 2020–2022, life expectancy at birth in Turkey was 77.5 years (4). The elderly population, including those 65 years of age and older, has increased by 22.6% in the last five years. In 2030, the percentage of the population aged 65 years and over has been projected to be 12.9%, 16.3% in 2040, 22.6% in 2060, and 25.6% in 2080 (5).

Because aging is an ongoing biological process, it causes a wide range of changes in all organs, including the skin (6, 7). Aging causes decreased epidermal hydration and increased transepidermal water loss, which leads to dry, xerotic skin. The epidermal turnover rate and the production of lipids and filaggrin also decline with aging. Consequently, the epidermal barrier function does not function properly. Moreover, the immune system, which enables the body to repair DNA and wounds, as well as manintain thermoregulatory mechanisms, sweat production, sebum production, and vitamin D production, weakens with age (2, 8). In addition to these changes, reduced functional capacity, associated chronic conditions, polypharmacia, and poor skin care and personal hygiene practices, increase the susceptibility of elderly patients to skin diseases and issues (9–11).

This study aimed to evaluate the incidence, frequency, age, gender, and seasonal distribution of dermatological disorders among geriatric patients admitted to the outpatient dermatology clinic at a university hospital in the city of Ordu, Turkey.

MATERIALS AND METHOD

This retrospective descriptive study was conducted in the Department of Dermatology at the University of Ordu, Turkey. All patients over 65 years of age who attended the dermatology outpatient clinic from June 2019 to June 2021 were included in the study. The study was conducted in accordance with the Helsinki Declaration and was approved by the Ordu University Training and Research Hospital Ethics Review Board (Number: 2023/214). According to the World Health Organization classification, the patients in this study were grouped by gender and age group: 65–74 years, 75–84 years, and 85 years or older.

Skin diseases were categorized into 12 different groups, including pruritus, eczematous dermatitis, papulosquamous diseases, bacterial infections, viral infections, fungal infections, benign neoplasms, precancerous, and malignant lesions, urticaria, and adverse drug reactions, vesiculobullous diseases, acne, and related diseases, and other diseases (disorders of physical agents, hair disorders, nail disorders, mucosal disorders, vascular diseases, granulomatous disorders, pigmentation disorders, and connective tissue diseases, metabolic skin diseases, panniculitis, kserosis cutis, and parasitic infestations).

Statistical Analysis

Categorical data were expressed as frequency (n) and percentage (%). Pearson's chi-square test was used to determine the relationships between the categorical variables. Continuous variables were expressed as mean±standard deviation (minimum-maximum value). In the chi-square tests, if the expected frequencies were below 5, the likelihood ratio test statistic was calculated instead of Pearson's test statistic. All statistical analyses were performed using SPSS v28 (IBM Inc., Chicago, IL, USA) statistical software.

RESULTS

This retrospective cross-sectional study used a sample of 2,431 patients who presented to the Ordu University Training and Research Hospital Dermatology Polyclinic between 2019 and 2021. Of these patients, 49.5% (n = 1203) were female, and 50.5% (n = 1228) were male. The distribution of the patients according to the seasons showed that the highest number of applications were in winter (n = 787, 32.4%), followed by autumn (n = 670, 27.6%), summer (n = 632, 26.0%), and spring (n = 342, 14.1%). The mean age of the patients was 74.02±7.07 (65–100) years; 1,412 (58.1%) patients were in the 65–74 age group, 940 (38.7%) patients were in the 75–89 age group; and 79 (3.2%) patients were in the ≥ 90 age group.

Of the patients in the study sample, 23.1% presented with an acute complaint, and 76.9% presented with a chronic complaint. Only 11.2% of the patients had xerosis. Overall, the most frequent diagnoses were pruritus (n = 424, 17.4%); eczematous dermatitis (n = 395, 16.2%); fungal infections (n = 372, 15.3%); premalign and malign skin disorders (n = 247, 10.2%); bacterial infections (n = 147, 6%); viral infections (n = 118, 4.9%); papulosquamous diseases (n = 95, 3.9%); urticaria and adverse drug reactions (n = 96, 3.9%); benign skin tumors (n = 79, 3.2%); acneiform disorders (n = 40, 1.6%); and vesiculobullous disorders (n = 22, 0.9%). The group with other disorders included the following: vascular disorders (n = 95, 3.9%); disorders due to physical agents (n = 83, 3.4%); parasitic infestations (n = 92, 3.8%); mucosal disorders (n = 12, 0.7%); hair disorders (n = 12, 0.5%); nail disorders (n = 6, 0.2%); and pigmentation disorders (n = 8, 0.3%). The frequency distribution of the disease diagnoses of the patients is shown in Table 1.

Table 1. The distribution of diagnosis of the patients' according to gender, age groups, and seasons

			Pruritus	Eczematous dermatitis	Papulosquamous diseases	Bacterial infections	Viral infections	Fungal infections	Other disorders	Benign skin tumors	Premalign and malign diseases	Urticaria and adverse drug reactions	Vesiculobullous diseases	Acneiform disorders
Gender	Female	n	212	167	43	79	57	200	215	41	101	56	14	18
		%	17.6	13.9	3.6	6.6	4.7	16.6	17.9	3.4	8.4	4.7	1.2	1.5
	Male	n	212	228	52	68	61	172	181	38	146	40	8	22
		%	17.3	18.6	4.2	5.5	5.0	14.0	14.7	3.1	11.9	3.3	0.7	1.8
Age groups	65-74	n	185	252	64	85	72	242	255	41	121	60	9	26
		%	13.1	17.8	4.5	6.0	5.1	17.1	18.1	2.9	8.6	4.2	0.6	1.8
	75-89	n	216	135	28	57	45	122	131	33	113	36	10	14
		%	23.0	14.4	3.0	6.1	4.8	13.0	13.9	3.5	12.0	3.8	1.1	1.5
	≥90	n	23	8	3	5	1	8	10	5	13	0	3	0
		%	29.1	10.1	3.8	6.3	1.3	10.1	12.7	6.3	16.5	0.0	3.8	0.0
Seasons	Spring	n	60	63	18	15	24	50	41	10	33	16	4	8
		%	17.5	18.4	5.3	4.4	7.0	14.6	12.0	2.9	9.6	4.7	1.2	2.3
	Summer	n	118	104	15	46	23	116	97	17	57	20	6	13
		%	18.7	16.5	2.4	7.3	3.6	18.4	15.3	2.7	9.0	3.2	0.9	2.1
	Autumn	n	112	109	19	48	38	102	112	20	73	24	6	7
		%	16.7	16.3	2.8	7.2	5.7	15.2	16.7	3.0	10.9	3.6	0.9	1.0
	Winter	n	134	119	43	38	33	104	146	32	84	36	6	12
		%	17.0	15.1	5.5	4.8	4.2	13.2	18.6	4.1	10.7	4.6	0.8	1.5
Total		n	424	395	95	147	118	372	396	79	247	96	22	40
%		%	17.4	16.2	3.9	6.0	4.9	15.3	16.3	3.2	10.2	3.9	0.9	1.6

Table 2. The difference in the diagnosis of the disease of the patients according to the gender

Diagnosis of the disease	Gender				Total	
	Female		Male			
	n	%	n	%	n	%
Pruritus	212	17.6	212	17.3	424	17.4
Eczematous dermatitis	167	13.9	228	18.6	395	16.2
Papulosquamous diseases	43	3.6	52	4.2	95	3.9
Bacterial infections	79	6.6	68	5.5	147	6.0
Viral infections	57	4.7	61	5.0	118	4.9
Fungal infections	200	16.6	172	14.0	372	15.3
Benign skin tumors	41	3.4	38	3.1	79	3.2
Premalign and malign diseases	101	8.4	146	11.9	247	10.2
Urticaria and adverse drug reactions	56	4.7	40	3.3	96	3.9
Vesiculobullous diseases	14	1.2	8	0.7	22	0.9
Acneiform disorders	18	1.5	22	1.8	40	1.6
Other disorders	215	17.9	181	14.7	396	16.3
Total	1203	100.0	1228	100.0	2431	100.0
p	0.002 (χ^2: 29.020)					

χ^2: Pearson's chi-square test statistic

Table 3. The difference in the diagnosis of the disease of the patients according to the age groups

Diagnosis of the disease	Age groups						Total	
	65-74		75-89		≥90			
	n	%	n	%	n	%	n	%
Pruritus	185	13.1	216	23.0	23	29.1	424	17.4
Eczematous dermatitis	252	17.8	135	14.4	8	10.1	395	16.2
Papulosquamous diseases	64	4.5	28	3.0	3	3.8	95	3.9
Bacterial infections	85	6.0	57	6.1	5	6.3	147	6.0
Viral infections	72	5.1	45	4.8	1	1.3	118	4.9
Fungal infections	242	17.1	122	13.0	8	10.1	372	15.3
Benign skin tumors	41	2.9	33	3.5	5	6.3	79	3.2
Premalign and malign diseases	121	8.6	113	12.0	13	16.5	247	10.2
Urticaria and adverse drug reactions	60	4.2	36	3.8	0	0.0	96	3.9
Vesiculobullous diseases	9	0.6	10	1.1	3	3.8	22	0.9
Acneiform disorders	26	1.8	14	1.5	0	0.0	40	1.6
Other disorders	255	18.1	131	13.9	10	12.7	396	16.3
Total	1412	100.0	940	100.0	79	100.0	2431	100.0
p	<0.001 (LRχ^2:91.800)							

LRχ^2: Likelihood Ratio chi-square test statistic

The analysis of disease distribution according to gender showed statistically significant differences between the groups ($p = 0.002$), as shown in Table 2. The female patients were predominantly diagnosed with other disorders, pruritus, and fungal infections. The male patients were predominantly diagnosed with eczematous dermatitis, pruritus, and other disorders. Premalignant and malignant diseases were more prevalent among males, accounting for 11.9% and 8.4%, respectively. The incidence of benign skin tumors was comparable in both females and males.

The disease distribution varied according to age group, which was statistically significant ($p < 0.001$), as shown in Table 3. As expected, there was a notable increase in the prevalence of premalignant and malignant diseases as the age of the patients increased. Additionally, benign skin tumors were the most frequently observed in patients older than 90 years. In contrast, eczematous dermatitis, viral infections, fungal infections, urticaria, adverse drug reactions, acneiform disorders, and other disorders became less frequent as the age group increased. The disease group with other disorders was the most frequently encountered in the 64–74 age group. Patients between 75 and 89 years and patients over 90 years were diagnosed with pruritus.

The prevalence of some diseases variee according to season (Table 4). Eczematous dermatitis was the most frequently observed disease in the spring, followed by pruritus in the summer and fall, and other disorders in the winter. Fungal infections were the most frequently diagnosed in the summer, while viral infections were the most frequent in the spring.

The rate of patients with only one complaint was 81.0%, the rate of patients with two complaints was 13.9%, and the rate of patients with more than three complaints was 5.1%. When a patient presented with multiple complaints, the primary diagnosis related to the primary complaint was taken into account. The differences in the number

Table 4. The difference in the diagnosis of the disease of the patients according to the seasons

Diagnosis of the disease	Seasons								Total	
	Spring		Summer		Autumn		Winter			
	n	%	n	%	n	%	n	%	n	%
Pruritus	60	17.5	118	18.7	112	16.7	134	17.0	424	17.4
Eczematous dermatitis	63	18.4	104	16.5	109	16.3	119	15.1	395	16.2
Papulosquamous diseases	18	5.3	15	2.4	19	2.8	43	5.5	95	3.9
Bacterial infections	15	4.4	46	7.3	48	7.2	38	4.8	147	6.0
Viral infections	24	7.0	23	3.6	38	5.7	33	4.2	118	4.9
Fungal infections	50	14.6	116	18.4	102	15.2	104	13.2	372	15.3
Benign skin tumors	10	2.9	17	2.7	20	3.0	32	4.1	79	3.2
Premalign and malign diseases	33	9.6	57	9.0	73	10.9	84	10.7	247	10.2
Urticaria and adverse drug reactions	16	4.7	20	3.2	24	3.6	36	4.6	96	3.9
Vesiculobullous diseases	4	1.2	6	0.9	6	0.9	6	0.8	22	0.9
Acneiform disorders	8	2.3	13	2.1	7	1.0	12	1.5	40	1.6
Other disorders	41	12.0	97	15.3	112	16.7	146	18.6	396	16.3
Total	342	100.0	632	100.0	670	100.0	787	100.0	2431	100.0
p	0.023 (χ^2: 51.035)									

χ^2: Pearson's chi-square test statistic

Table 5. The differences in number of patients' complaints according to gender, age groups, and seasons

		Number of complaints						p
		1		2		≥3		
		n	%	n	%	n	%	
Gender	Female	976	81.1	169	14.0	58	4.8	0.858 (χ^2: .306)
	Male	994	80.9	169	13.8	65	5.3	
Age groups	65-74	1143	80.9	203	14.4	66	4.7	0.421 (χ^2: 3.888)
	75-89	768	81.7	121	12.9	51	5.4	
	≥90	59	74.7	14	17.7	6	7.6	
Seasons	Spring	273	79.8	48	14.0	21	6.1	0.004 (χ^2:19.420)
	Summer	535	84.7	75	11.9	22	3.5	
	Autumn	547	81.6	100	14.9	23	3.4	
	Winter	615	78.1	115	14.6	57	7.2	

χ^2 : Pearson's chi-square test statistic

of patients' complaints according to gender, age groups, and seasons are examined in Table 5. The number of patients' complaints did not significantly change according to gender (p = 0.858). The rates of complaints were similar for women and men. The number of complaints increased as age increased, but this increase was not statistically significant (p = 0.421). The number of patients' complaints showed a statistically significant change according to the seasons (p = 0.004). The rate of those with ≥3 complaints was approximately 2 times higher in spring and winter than in summer and fall (6.1% and 7.2% vs. 3.5% and 3.4%, respectively).

DISCUSSION

In this study, there was a similar number of female and male patients. In some previous studies, female patients outnumbered male patients (7, 12, 13). In other previous studies, there were more male patients than female patients (14-17). In this current study, the majority of the patients were between the ages of 65 and 74 years, similar to other studies (7, 13-15, 17). Our findings showed that, the most frequent diagnoses were in the winter, followed by the autumn. In a study conducted by Yaldız et al., patients attended to the hospital in the winter, followed by the spring (14). Another previous study found that patients most frequently visited the hospital in the autumn and spring (17).

Pruritus, eczematous dermatitis, fungal infections, premalignant skin diseases, and bacterial diseases were the most frequently diagnosed in this study, similar to the previous studies (14, 15, 17, 18). Bilgili et al. reported the same most common disease groups as found in our study, with the exception that urticaria-angioedema was the fourth most common disease, which was as common in our cohort. Moreover, there were no patients over 90 years of age diagnosed with urticaria (16). Sarac et al. reported the same most common disease groups as in our study, but their patients were diagnosed with a greater number of papulosquamous diseases (7). In our study, more than 75% of the patients had chronic complaints, and four out of five patients had only one complaint. In a previous study, more than 90% of the patients had only one complaint in a study with 209 patients (13).

As people age, their sebaceous and sweat glands produce less sebum and less sweat, which leads to the development of xerosis. The water

content of the stratum corneum decreases when older people are immobile. Additionally, xerosis may be caused by the latter stage of renal illness, a lack of zinc and critical fatty acids, thyroid conditions, and medications (12). In our study group, xerosis was present in 11.2% of the patients. Kılıç et al. conducted a study on elderly patients in nursing homes, and they reported that 45.3% of these patients had xerosis. In a study conducted by Yaldız et al., 7092 elderly patients were retrospectively examined, and the ratio of xerosis was found to be 8.17%, similar to our findings (14). In another study, the authors analyzed 7722 patients over 65 years, and the prevalence of xerosis was reported to be 13.8% (15). In another study, 4.7% of the 877 patients had xerosis (7).

In our study, pruritus was the most frequently observed in both genders. Its prevalence increased with advancing age and was not affected by season. Similar to our study, in (7), the prevalence of pruritus prevalence was found to be the same in both genders, and its prevalence increased with advancing age. In the same study, pruritus was the third most common disease in the patient group (7). In another study conducted in Turkey, pruritus was the third most common disease, and its prevalence increased with advancing age (19). Most cases of pruritus in the elderly population have been reported to be related to xerosis and aging (12, 17). Systemic illnesses, as well as psychological issues, can also contribute to pruritus. Metabolic illnesses that might produce pruritus include diabetes mellitus (DM), iron-deficient anemia, infections, medications, renal, and hepatic insufficiency, thyroid, and parathyroid disorders, and malignancies (12).

The prevalence of eczematous dermatitis steadily declines with age. The reason may be that there is more contact with environmental and physical factors in the younger individuals (7, 17). In this study, eczematous dermatitis was the second leading cause of elderly attendance at outpatient clinics, although its prevalence decreases with advancing ages. Eczematous dermatitis was more common in the 65–74 age group in both genders (7). Yıldız et al. reported that eczematous dermatitis was the most common disorder seen in elderly patients. The elderly have increased sensitivity to allergens and irritants because of a malfunctioning of the epidermal barrier (15). In this study, eczematous dermatitis is the most frequently observed in spring. Yaldız et al. reported that eczematous dermatitis was the most common disease in their patient group, and it was more common in patients ages 65–75 years, in the winter, and in females (14).

Bacterial infections were observed in all age groups, with a prevalence of 6%. Bacterial infections were more common in females and in the summer and autumn, but the difference was not significant. The healing process can be delayed for several reasons, including reduced blood flow, compromised immunological function, thinning and dryness of the skin, related systemic disorders, epidermal damage brought on by itching, and diminished personal care, all of which contribute to infections. In a previous study by Yıldız et al. (15), the prevalence of bacterial infections was 5.9 in the study conducted by Yıldız et al. (15). The authors reported that the prevalence of bacterial infections was 7.3%, and they were observed in all age groups and in both genders (17).

In this study, fungal infections were found to be the third most common skin disorder in this study. The frequency of these infections declined with age. They were more common in the summer than in the other seasons. In this study, the female patients had more fungal infections than the male patients. However, in Yalçın et al., fungal infections were found to be more common in males and in the summer (17). In another study, similar to the study conducted by Yalçın et al. the authers found that the fungal infections were more common in males (12). Yaldız et al. reported that fungal infections were more common in males, in the summer, and

in older patients (14). Humidity and temperature may be the reasons for the increased prevalence of fungal infections in the summer (12, 14, 17).

In this study, it was observed that the rate of premalignant and malignant diseases increased gradually as patient age increased. Aging is accompanied by an increasing prevalence of malign illnesses due to mutations, a decline in DNA repair ability, and lifelong exposure to carcinogens and sun exposure. Malign diseases are known to be more common in male patients (14). In line with this knowledge, in this study, more males than females were affected by premalignant and malignant diseases. However, a previous study found that premalignant and malignant skin diseases were more common in females and people over the age of 75 years (7).

Limitations

This study has the following limitations. First of all, because of its retrospective design, the diagnoses were taken from hospital record. Second, because the study was conducted in a tertiary health care hospital, the results cannot be generalized to all populations. Third, although some patients had more than one complaint, only the complaint based on which they were admitted to the hospital was assessed.

CONCLUSION

As the percentage of geriatric patients is increases, special attention should be paid to this age group. Fortunately, the majority of frequent illnesses among the elderly are not life-threatening, and they are preventable. This study fovused on dermatological conditions in the elderly. Further epidemiological studies are needed to assess the prevalence of skin diseases, skin care, treatment, and prevention strategies for skin disorders in geriatric patients.

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