Journal of Experimental and Clinical Medicine
https://dergipark.org.tr/omujecm

Research Article

J Exp Clin Med
2022; 39(2): 327-333
doi: 10.52142/omujecm.39.2.4

Prevalence of skin disorders among geriatric patients in the black sea region of Turkey

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Received: 06.06.2021 • **Accepted/Published Online:** 16.11.2021 • **Final Version:** 18.03.2022

Abstract

Aging is an unavoidable process affecting all organ systems including the skin. The elderly population is defined as people aged ≥65 years, and the elderly population is growing worldwide. The present study aims to determine the prevalence of dermatological diseases in the elderly patients aged ≥65 years and evaluate sociodemographic characteristics. The data of 300 geriatric patients aged ≥65 years who were admitted to our clinic between October 2013 and January 2014 were retrospectively reviewed. Of these patients, 130 (43.3%) were female and 170 (57.7%) were male. The mean age of the patients was 73.57 ±6.80 years. Eczematous dermatitis was detected in 77 of patients (25.7%). Of these patients, 135 (45%) had xerosis. The most common benign skin tumor was isolated seborrheic keratosis (n=82,58%). Actinic keratosis comprised the majority of malignant and premalignant lesions that occurred in 25 patients (8.3%). Cellulitis was the most common bacterial skin infection that occurred in 21 patients (7%). The rate of lichen planus was 0.6% in males and significantly more common in females with a rate of 3.1% ($p=0.09$; $p<0.05$). The rate of xerosis was 39.2% in patients aged 65-74 years, 53% in patients aged 75-84 years, and 54.2% in patients aged ≥85 years. The relationship between age and the rate of xerosis showed a borderline significance ($p=0.05$; $p<0.05$). Keeping in mind the most common dermatological problems in geriatric patients would enable early diagnosis of the conditions and selection of appropriate therapies.

Keywords: geriatric patients, prevalence, skin disorders, xerosis

1. Introduction

Geriatric patients are defined as people aged ≥65 years. Skin lesions are frequently encountered in the geriatric population (1). A decrease in the fertility rate due to challenges of modern life and an increase in the life expectancy have resulted in an increase in the ratio of the elderly people in the population. Scientific and technological advances in medicine, prevention of diseases and early diagnosis and treatment of the conditions, and the decrease in the infant mortality rate due to improvements in preventive healthcare services are other factors increasing the average life expectancy (2). According to the 2020 Turkish Statistical Institute (TÜİK) data in Turkey, the elderly population (aged ≥65 years) was 9.5% of the population in Turkey (3). According to the definition of the United Nations, countries with the proportion of older persons between 8% and 10 are considered to have moderate population aging, and countries with the proportion of older persons more than 10% are considered to have advanced population aging (4). It was reported in United Nations Development Programme that the proportion is projected to rise further to 16 per cent by 2050, so that one in six people in the world will be aged 65 years or over (4).

The skin functions impair with advancing age, such as cellular regeneration capacity, barrier functions, sensory perception, mechanical protection, wound healing, immune response, thermoregulation, sweat production, sebum production, vitamin D synthesis, and DNA repair capacity. As a result, skin changes such as coarsening, wrinkling and slack skin are common in the older patients (5). The mobility of patients decreases with increasing age, additional diseases occur, and the mobility of the older people reduces (6). An increase in the incidence of systemic conditions, skin damage caused by ultraviolet exposure, presence of xerosis, and peripheral vascular disorders also increase the incidence of skin disorders in geriatric patients (7, 8). It was reported that the prevalence of skin diseases in geriatric patients is 65%, and most elderly patients have more than one dermatological conditions (9). It is considered that epidemiological studies would lead the way for the planning of healthcare services delivered to the elderly patients and the development of preventive health services (2).

The present study evaluates the types of skin disorders observed in patients aged ≥65 years, and the distribution of these disorders by gender, age group and geographic characteristics.

2. Material and Methods

The present study was carried out after obtaining approval of the Düzce University Clinical Trials Ethics Committee with an approval number of 2014/31. The data of 300 geriatric patients aged ≥65 years who were admitted to the Dermatology Outpatient Clinics of Düzce University Faculty

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of Medicine between October 2013 and January 2014 were retrospectively reviewed. Age, gender and residence information were recorded. The patients were divided into two groups: patients residing in the town centers of the Düzce province and its districts and patients residing in the rural areas. Patients were also divided into age groups as 65-74 years, 75-84 years, and ≥85 years (2.5). The presenting symptoms and dermatological findings of the patients were recorded. Accordingly, the following disease groups were recorded: eczematous dermatitis, xerosis, pruritus, psoriasis, fungal infections, lichen planus, urticaria/angioedema, viral infections, bacterial infections, skin pigmentation disorders, benign and malign diseases of the skin, keratinization disorders, vesiculobullous diseases, mucous membrane disorders, infestations, rosacea, papulosquamous disorders, and others. These findings were compared according to age, age group and sociodemographic characteristics.

The study evaluated the relationship between the detailed prevalence of dermatological disorders in the elderly population aged ≥65 years and gender, sociodemographic and clinical characteristics of the patients. A histogram curve was used to evaluate whether a numerical variables was normally distributed. The categorical variables were expressed as number and percentage. Descriptive statistics (mean, standard deviation, median, minimum, maximum, percentage) were calculated for all study data. The categorical variables were compared using Pearson's chi-squared test, Fisher's exact test, and Fisher-Freeman-Halton test. The post-hoc Bonferroni test was used in categorical variables that showed significant difference in the initial tests. The statistical analysis was performed using PASW version 18 software. A p-value <0.05 was considered statistically significant.

3. Results

Of 300 patients included in the study, 130 (43.3%) were female and 170 were male, and the female-to-male ratio was 1.3:1. The mean age of the patients was 73.57 ± 6.80 years with a range of 65 to 99 years. The mean age was 73.49 ± 6.78 in females and 73.64 ± 6.84 years in males. There were 176 (58.7%) patients in the age group of 65-74 years, 100 patients (33.3%) in the age group 75-84 years, and 24 (8%) patients in the age group of ≥85 years.

Seventy-seven patients (25.7%) had eczematous dermatitis. The most common type of eczematous dermatitis was neurodermatitis that occurred in 18 patients. Patients with neurodermatitis accounted for 23.3% of all patients with eczematous dermatitis. This was followed asteatotic eczema in 10 patients (12%), irritant contact dermatitis in 9 patients (11.6%), nummular dermatitis in 8 patients (10.3%), and isolated stasis dermatitis in 7 patients (9.09%).

A total of 135 patients (45%) had isolated xerosis. Fifteen patients (5%) had psoriasis vulgaris, 73 patients (24.3%) had pruritus, and 5 patients (1.7%) had lichen planus. Fungal infections were observed in 89 patients (29.7%).

Benign skin tumors were observed in a total of 139 patients (46.3%). The most common benign skin tumors were isolated seborrheic keratosis (n=82, 58%) (27.3% of the entire study population) and isolated cherry angioma (n=22, 15.8%). There were two patients (1.4%) with isolated skin tag and 21 patients (15.1%) with cherry angioma coinciding with seborrheic keratosis.

Malignant and premalignant skin tumors were detected in a total of 54 patients (18%) in the present study. Of these patients, 25 (46%) had actinic keratosis, 15 (27.7%) had basosquamous carcinoma (BSC), 3 (5.5%) had squamous cell carcinoma (SCC), 7 (12%) had actinic keratosis and SCC, 1 (1.8%) had actinic keratosis and concurrent Bowen's disease, 1 (1.8%) had actinic keratosis and concurrent malignant melanoma, 1 (1.8%) had Kaposi's sarcoma, 1 (1.8%) had actinic keratosis and concurrent BSC. The bacterial infections of the skin were identified in 45 patients (15%). Of these patients, the majority had cellulitis (46.6%) and furuncles (31.1%). The viral infections of the skin were identified in 17 patients (3.7%). Of these patients, 10 (58.8%) had herpes zoster, 6 (35.2%) verruca vulgaris, and 1 (5.8%) had herpes simplex. Vesiculobullous diseases were identified in 8 patients (2.7%). Of these patients, 4 (50%) had pemphigus vulgaris, 2 (25%) had pemphigus foliaceus, 1 (12.5%) had bullous pemphigoid, and 1 (12.5%) had dermatitis herpetiformis. Urticarial skin rash was identified in 19 patients (7.3%). A callus was identified in 14 patients /4.7%) (Table 1). When gender distribution of the diseases was evaluated, 25.4% of females and 25.9% of males had eczematous dermatitis. The rate of eczematous dermatitis did not significantly differ between males and females (p=0.922; p>0.05). The rate of xerosis was 45.3% in males and 44.6% in females. The rate of xerosis did not significantly differ between males and females (p=0.907; p>0.05).

Table 1. Demografical features

	N*	(%)ᵝ
Patients aged 65-74 years	176	(58.7%)
Patients aged 75-84 years	100	33.3%)
Patients aged ≥85 years	24	(8%)
Mean Age£	73.57 ± 6.80	
Female	130	(43.3%)
Male	170	(56.7%)
Rural	150	(50%)
Urban	150	(50%)
Eczematous Dermatitis	77	(25.7%)
Xerosis	135	(45%)
Psoriasis Vulgaris	15	(5%)
Lichen Planus	5	(1.7%)
Benign Skin Tumors	139	(46.3%)
Premalign/ Malign Skin Tumors	54	(18%)
Bakteriyel Infections	45	(15%)
Viral Infections	17	(3.7%)
Vesiculobullous Diseases	8	(2.7%)
Urticarial Skin Rash	19	(7.3%)
Callus	14	(4.7%)

The rate of pruritus was 26.22% in females and 22.9% in males. The rate of pruritus did not significantly differ between males and females (p=0.520; p>0.05).

The rate of lichen planus was 0.6% in males and significantly more common in females with a rate of 3.1% (p=0.09; p<0.05). The rate of benign skin tumors was 41.5% in females and 50% in males. The rate of malignant and premalignant skin tumors was 13.8% in females and 21.2% in males. The rate of malignant and premalignant skin tumors did not significantly differ between males and females (p=0.101; p>0.05) (Table 2).

Table 2. Gender distribution of the diseases

	Female	Male 170 (66.7%)	P Value
Eczematous Dermatitis	25.4%	25.9%	0.922
Xerosis	44.6%	45.3%	0.907
Pruritus	26.22%	22.9%	0.520
Lichen Planus	3.1%	0.6%	0.09
Benign Skin Tumors	41.5%	50%	0.145
Premalign/ Malign Skin Tumors	13.8%	21.2%	0.101
Vesiculobullous Diseases	3.1%	2.4%	0.731
Bacterial Skin Infections	13.8%	15.9%	0.625

*P < 0.05 was considered statistically significant.

Of the study patients, 150 (50%) lived in the rural areas and 150 (50%) lived in the urban areas.The rate of callus was 7.3% in patients living in the rural areas and 2% in those living in the urban areas. The majority of individuals with callus (78.6%) lived in the rural areas (p=0.029; p<0.05).

In the present study, patients aged 65-74 years comprise 58.7%, patients aged 75-84 years comprise 33.3%, and patients aged ≥85 years comprise 8% of the entire study population (Table 3.).

The rate of eczematous dermatitis was 25.6% in patients aged 65-74 years, 22% in patients aged 75-84 years, and 41.7% in patients aged ≥85 years. There was a significant difference in the age distribution of eczematous dermatitis (p=0.140; p>0.05).

The rate of xerosis was 39.2% in patients aged 65-74 years, 53% in patients aged 75-84 years, and 54.2% in patients aged ≥85 years. The relationship between age and the rate of xerosis showed a borderline significance (p=0.05). Among patients aged 75-84 years, the number of patients with xerosis was marginally higher than the number of patients without xerosis (p=0.05). The distribution of xerosis in the other age groups was not statistically significant (Table 3).

The rate of pruritus was 20.5% in patients aged 65-74 years, 30% in patients aged 75-84 years, and 29.2% in patients aged ≥85 years. The rate of pruritus did not significantly differ across the age groups (p=0.175; p>0.05).

Table 3. Distribution of the diseases according to age groups

	65-74 years 176 (%58.7)	75-84 years 100 (%33.3)	≥85 years 24 (%8)	P value
Eczema tous Dermatitis	25.6%	22%	41.7%	0.140
Xerosis	39.2%	53%	54.2%	*0.05
Pruritus	20.5%	30%	29.2%	0.175
Benign Skin Tumors	43.8%	50%	50%	0.565
Premalign/ Malign Skin Tumors	13.1%	27%	16.7%	*0.015
Bakteriyel Infections	17.6%	11%	12.5%	0.314
Vesiculobullous Skin Diseases	1.7%	2%	12.5%	*0.025
Lichen Planus	2,3%	1%	0	0.777

*P < 0.05 was considered statistically significant.

The rate of benign skin tumors was 43.8% in patients aged 65-74 years, 50% in patients aged 75-84 years, and 50% in patients aged ≥85 years. Benign skin tumor that had the highest frequency in all age groups was seborrheic keratosis. Of patients with seborrheic keratosis, 52.4% were aged 65-74 years, 39% in patients aged 75-84 years, and 8.5% were aged ≥85 years. Skin tags were observed only int he 65-74 years age group. Of patients with a cherry angioma, 63.6% were aged 65-74 years, 27.3% were aged 75-84 years, and 9.1% were aged ≥85 years. The frequency of benign skin tumors did not significant change across the age groups (p=0.565; p>0.05).

The rate of bacterial skin infections was 17.6% in patients aged 65-74 years, 11% in patients aged 75-84 years, and 12.5% in patients aged ≥85 years. The most common bacterial skin infection in all age groups was cellulitis. The frequency of bacterial skin infections did not significantly change across the age groups (p=0.314; p>0.05).

The rate of malignant and premalignant skin diseases was 13.1% in patients aged 65-74 years, 27% in patients aged 75-84 years, and 16.7% in patients aged ≥85 years. The most common lesion was actinic keratosis in all age groups. The frequency of malignant and premalignant skin diseases significantly differ across the age groups. The rate of malignant and premalignant skin diseases was significantly lower in patients younger than 75 years than in patients aged 75-84 years (p=0.015; p<0.05) (Table 3.).

The rate of vesiculobullous skin diseases was 1.7% in patients aged 65-74 years, 2% in patients aged 75-84 years, and 12.5% in patients aged ≥85 years. The rate of vesiculobullous skin diseases was significantly higher in patients aged ≥85 years (12.5%) than in patients in the other age groups (1.7% and 2%, respectively) (p=0.025; p<0.05).

4. Discussion

The differentiation in the epidermis is impaired with aging, and focal tissue proliferations are often observed. Therefore, an increase in observed in the prevalence of various benign neoplasms with aging (8). The most common disease group in the present study was benign neoplasms of the skin (46%). Benign neoplasms of the skin were identified as one of the most common skin conditions in geriatric patients in similar studies (10-12). Darjani A et al. reported in 2021 that benign neoplasm was a common skin disease among patients with 68.3% (12). Also similar to our study the most frequently encoded individual diagnoses identified were “other and unspecified malignant neoplasm of skin” in a study performed in hospitalized geriatrics (13).

Seborrheic keratoses are very commonly encountered in the elderly population. Also in the present study, the most common skin condition among benign neoplasms of the skin was seborrheic keratosis, accounting for 27% of all benign skin tumors. In a study by Baykal et al., seborrheic keratosis was similarly identified as the most common benign neoplasm of the skin (14). The second most common benign neoplasm of the skin identified in the present study was cherry angioma with a rate of 7.3%. In an Indian study involving 320 geriatric patients, cherry angiomas were found to be one of the most common skin conditions, with a prevalence rate of 48.1% (15). Seborrheic keratosis was detected in of 42.6% patients in a recent study (16).

The skin becomes dry and itchy over years in the elderly patients. The stratum corneum is the skin layer functioning as the skin barrier that plays the most critical role in the regulation of water loss from the skin. Various factors such as the climate, drugs, malignant and endocrine disorders, infections and kidney diseases may induce dry skin (17). The increased incidence of xerosis with aging arises from the changes in the moisture of the skin and barrier functions (18). The second most common skin finding observed in geriatric patient population in the present study was xerosis with a rate of 45%. Various studies have reported rates ranging from 3.7% to 75% (2,8,19). This difference can be explained by the fact that xerosis is not only related to aging but other factors may also be involved. In a recent study xerosis was detected as 45.2% percentage in elderly patients (16).

There is an increased incidence of infectious diseases of the skin in the elderly population due to neurological deficits that are commonly observed in the elderly, impairment in immune functions, obesity, malnutrition, poor regeneration capacity in the epidermis, and particularly poor daily self care (2). The third most common disease group in the present study was fungal infections, which were detected in a total of 89 patients (29.7%). A study in Egypt found that skin infections were the most common skin condition in the elderly population (20). The prevalence of fungal skin infections was found to be 10.4% in a large-scale study involving 2,496 geriatric patients (21). Likely in a recent study showed that fungal infections are the must common skin infections (22). Viral infections were less frequent (3.7%) than the bacterial and fungal skin infections in the present study. Herpes zoster accounts for 37% of the viral infections. A study in Iran found a rate of as high as 8.2%, herpes zoster accounting for the majority of these cases (23). Herpes zoster is frequently encountered in the elderly population, particularly in parallel to a decline in cellular immunity with aging (24).

Pruritus is one of the most common skin conditions in the elderly, and it can be a part of the underlying skin disease or a manifesting symptom of systemic diseases such as endocrine, renal, hematological or rarely malignant diseases (25). Pruritus was found in 24.3% of the patients in the present study. A comprehensive study in Italy identified pruritus as the most common dermatological skin disorder (11). In a recent study senil pruritus wasdetected as 17% percentage (22). Since this study was conducted in the months between October 2013 and January 2014, when the air temperature in Düzce begins to decrease, probably makes the skin dry and, thus, prone to pruritus. Xerosis is an important etiological factor for pruritus.

The rate of eczematous dermatitis was 25.7% in the present study. Bilgili et al. identified eczematous dermatitis as the most common dermatological disorder in geriatric patient population, with a reported prevalence of 32.7% (21). Likely in a 455 patient study xerosis was detected 13.8% percentage (26). According to Liao et al., an increase in the incidence of inflammatory skin conditions is almost inevitable due to flattening in dermo-epidermal junction, dermal and epidermal atrophy, decrease in the number of melanocytes, Langerhans cells, and fibroblasts, and more importantly the decline in barrier functions of the skin (27).

Regarding malignancy incidence, Black Sea Region has remarkably higher rates than the rest of the country (28). Aging is a risk factor for most of cancers (29). The rate of malignant and premalignant skin diseases was 18% in the present study, and actinic keratoses accounted for 18% and BSC accounted for 27% of these patients. In another study in Turkey, BSC accounted for 83.3% of all malignant neoplasms (21). Nonmelanoma skin cancers are common in geriatric patients. Along with sun damage, the decline in cellular immunity and genetic factors also play a role in the development of these lesions (8,28). Relative difference in the rate of various tumor types may have been caused by the involvement of additional factors in the neoplastic process.

Furthermore, vesiculobullous diseases were identified in a total of 8 patients (2.7%). The rate of vesiculobullous diseases was reported to be 0.8% in a study involving 2,734 elderly patients (2). The finding of the present study may be caused by relatively small number of patients.

Various studies examining skin findings in the elderly have found variable female-to-male ratios. The rate of female-to-male ratio was 0.8 in the study by Baş et al., 0.8 in the study by Yalçın et al. and 1.1 in the study by Baykal et al (2,5,14). Of the patients in the present study, 130 (43.3%) were female and 170 were male, with a female-to-male ratio of 0.7. In a recent study it was found that female ratio is higher than male (30)

When the distribution of disease groups was examined according to gender in the elderly patients, common diseases and their frequency rates were similar between males and females. Xerosis was identified in 46% of females and noted as the most common dermatological disease in the present study. This was followed by eczemas (42.9%) and benign neoplasms of the skin (41.5%). In a study by Baş et al., eczemas were identified as the most common skin disease in females (2). The rate of only lichen planus was significantly higher in females than in males in the present study ($p=0.09$; $p<0.05$). Although the present study found no significant relationship between the prevalence of xerosis and gender, a study in the literature reported a high rate of xerosis in female elderly population (31). Another study in Turkey reported higher rate of pruritus in the elderly females than in males, while the present study found no significant difference between males and females in terms of the frequency of pruritus (32). The differences in the study findings may be caused by the differences in the number of studied patients.

Of the patients in the present study, 150 (50%) lived in the rural areas and 150 (50%) lived in the urban areas. When the distribution of disease groups was examined according to residence in the elderly patients, common diseases and their frequency rates were similar between patients living in the rural areas and those living in the urban areas. The rate of callus was 7.3% among patients living in the rural areas and 2% in those living in the urban areas. The majority of patients (78.6%) with callus lived in the rural areas ($p=0.029$; $p<0.05$). The risk factors for the development of corns and calluses on the feet are bumps over bony areas, abnormal biomechanical foot functions, ill-fitting shoes, and repeated trauma due to athletic activities (33). Significantly higher rate of calluses and corns in rural areas was attributed to the living conditions in these areas.

In our study, Most participants were in the age grouped between 65-74 years as the percentage of 58.7%, similar to our study conducted in Turkey, most of the participants' age were between 65-74 years (2). The most common skin conditions in patients aged 65-74 years were benign skin tumors (43.8%), xerosis (39.2%), and eczematous dermatitis (25.6%). Different from the present findings, a study in the literature reported eczematous dermatitis as the most common (21.6%) dermatological disorder in patients aged 65-74 years (6).

The most common skin conditions in patients aged 75-84 years were xerosis (53.0%) and benign skin tumors (50%), and pruritus. Likewise, the most common dermatosis in patients aged 75-84 years was eczematous dermatitis (2,6). Xerosis (54.2%), fungal skin infections (41.7%) and eczematous dermatoses (41.7%) were identified as the most common skin conditions in patients aged ≥85 years. Similarly, Yalçin et al. reported eczematous dermatoses as the second most common (14.1%) skin condition (5). Pruritus was reported as the most common skin condition in patients aged ≥85 years (6). In the study by Baş et al., the most common skin condition was pruritus (16.9%) and the second most common skin condition was fungal skin infections (15.4%) in patients aged ≥85 years (2).

The present study found no significant relationship between age and the prevalence of eczematous dermatitis, pruritus and bacterial skin infections, while the study by Baş et al. reported a tendency to increase in the prevalence of these skin conditions with aging (2). The present study found a marginally significant relationship between age and the occurrence of xerosis ($p=0.05$), the rate of which was found to be significantly increased in patients aged 75-84 years. One study in Turkey did not show an increased prevalence of xerosis with aging (2). Another study reported a significantly higher rate of xerosis in patients aged 65-74 years than in patients aged ≥75 years (21). The distribution of malignant and premalignant skin lesions showed a significant difference across the age groups. The rate of malignant and premalignant skin lesions was significantly lower in patients younger than ≤75 years than in patients aged 75-84 years ($p=0.015$; $p<0.05$). The study by Baş et al. demonstrated a tendency to increase in the incidence of precancerous lesions and malignant neoplasms with aging (2).

The rate of vesiculobullous diseases was significantly higher in patients aged ≥85 years than in the other age groups ($p=0.025$; $p<0.05$). However, the study by Baş et al. reported no significant difference (2). In another 150 cases of vesiculobullous lesions study showed that most patients belonged to the geriatric age group of more than 50 years (34). The most common disease group in the present study was benign neoplasms of the skin. Xerosis is another significant skin problem in the elderly and showed an increased prevalence in patients aged 74-85 years. Fungal infections that were the most common infectious dermatological problems in the elderly were found in different localizations in an individual patient, probably due to spread to other body parts or poor self-care practices. Zona zoster is common in the elderly due to a decline in cellular immunity (35). The presence of xerosis and an underlying medical condition makes pruritus an important complaint in the elderly population. In geriatric patients, the incidence of lichen planus is remarkably higher in females than in males. Callus is less frequently observed in the elderly with limited daily life activities in monotonous urban life. Advancing age

significantly increases the risk of developing malignant and premalignant skin tumors and vesiculobullous skin disorders in older people.

The limitation of this study is being based only on patients who come to the outpatient clinic. But it should be kept in mind that the awareness on the common dermatological problems in the older people would enable early diagnosis and selection of appropriate treatment of the diseases.

Conflict of Interest

None to declare.

Acknowledgments

None to declare.

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