



## RESEARCH

# PREVALENCE OF SKIN DISEASES AMONG ELDERLY RESIDING IN NURSING HOMES IN MUGLA

## ABSTRACT

**Introduction:** Birth rates are not only declining worldwide but people are also living longer. Despite the growing elderly population, there are limited numbers of studies on this population residing in nursing homes. We aimed to determine the prevalence of skin diseases in elderly residing in nursing homes in Southwest Anatolia, and to contribute to the development of preventive healthcare for these diseases.

**Materials and Method:** We conducted a cross-sectional trial in two nursing homes located in the central province of Mugla. A questionnaire, including questions on sociodemographic characteristics, diagnosis of any dermatological diseases, and clinical history, was administered to the elderly patients.

**Results:** Of the 105 elderly patients, 64 (61.0%) were males and 41 (39.0%) were females. Lentigo was identified as the most common skin disease (90.5%). Xerosis (78.1%), senile angioma (61.0%), and tinea unguium (59.0%) was followed lentigo respectively. Five (4.8%) elderly patients had decubitus ulcers. A significant difference was detected in the occurrence of tinea pedis, and decubitus ulcers ( $p=0.032$  and  $p=0.000$ , respectively) in these patients compared with ambulatory patients.

**Conclusion:** This study is thought to be among the pioneer researches evaluating the prevalence of skin diseases in the elderly patients residing in nursing homes in Southwest Anatolia. The information obtained should contribute to epidemiological data to determine the prevalence of skin diseases observed in the elderly population in nursing homes in this area. This knowledge may lead to the improvement of measures for preventing skin diseases in these patients.

**Key Words:** Aged; Skin diseases; Nursing homes; Preventive medicine; Lentigo

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## ARAŞTIRMA

# MUĞLA'DA HUZUREVLERİNDE İKAMET EDEN YAŞLILARDA DERİ HASTALIKLARININ PREVALANSI

## Öz

**Giriş:** Tüm dünyada doğum hızları azalmakta, insanlar daha uzun yaşamakta ve yaşlı nüfus giderek artış göstermektedir. Artan yaşlı nüfusa rağmen huzurevlerinde yapılan çalışmalar sınırlıdır. Çalışmamız ile Güneybatı Anadolu'da huzurevlerinde görülen deri hastalıklarının prevalansını belirlemek ve bu hastalıklara yönelik koruyucu sağlık hizmetlerinin geliştirilmesine katkı sağlamak amaçlanmıştır.

**Gereç ve Yöntem:** Muğla il merkezinde bulunan kamuya ait iki huzurevinde, kesitsel nitelikte bir çalışma yapıldı. Tüm yaşlılara sosyodemografik, dermatolojik hastalıkların tanısı, özgeçmişleri ile ilgili değişkenleri içeren bir form uygulandı.

**Bulgular:** Çalışmaya katılan yaşlıların 64'ü (%61.0) erkekti, 41'i (%39.0) kadındı. Yaşlılarda en sık %90.5 ile lentigo görüldü. Bunu sırasıyla kserozis (%78.1), senil anjiom (%61.0), tinea unguium (%59.0) izledi. Yaşlıların 5'inde (%4.8) dekübit ülseri gözlemlendi. Yatağa bağımlı hastalarda yatağa bağımlı olmayan hastalara göre tinea pedis ve dekübit ülserinde anlamlı farklılık saptandı (sırasıyla  $p=0.032$ ,  $p=0.000$ ).

**Sonuç:** Araştırmanın Güneybatı Anadolu'da huzurevlerinde ikamet eden yaşlılardaki deri hastalıklarının prevalansını değerlendiren öncü çalışmalar olduğu düşünülmektedir. Bu çalışma ile bu bölgede huzurevindeki yaşlı nüfusta gözlenen deri hastalıklarının sıklığının saptanması ile epidemiyolojik verilere katkıda bulunulması ve bu hastalıklara yönelik koruyucu önlemlerin geliştirilmesi önerilmiştir.

**Anahtar Sözcükler:** Yaşlı; Deri hastalıkları; Huzurevleri; Koruyucu tıp; Lentigo

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## INTRODUCTION

Birth rates are not only declining worldwide but people are also living longer. According to the World Health Organization, the elderly population is expected to increase from 11% to 22% between the years 2000 and 2050. Furthermore, the population of people over the age of 60 years is expected to increase from 605 million to 2 billion (1). The elderly Turkish population was 6,192,962 in 2014 and represented 8% of the total population (2).

Because both systemic and skin diseases are more prevalent in the elderly, these patients represent a special group in dermatology (3). Despite the growing elderly population, there are limited numbers of studies on this population, particularly on those residing in nursing homes. Currently, majority of the studies conducted on elderly patients residing in nursing homes in Turkey are usually related to socio-demographic characteristics and quality of life (4-6). Studies conducted on the prevalence of skin diseases in elderly patients residing in nursing homes are scarce (7-11), and mostly related to the frequency of dermatophyte infections (12, 13).

Mugla is a province in the southwest of Turkey situated between 36° 17'–37° 33' N latitude and 27° 13'–29° 46' E longitude (14). The aims of this study were to determine the prevalence of skin diseases in elderly patients residing in nursing homes in Southwest Anatolia and to contribute to the development of preventive healthcare for these diseases.

## MATERIALS AND METHOD

This was a cross-sectional trial, conducted in two nursing homes located in the central province of Mugla. One hundred thirteen elderly were residing in nursing homes. One of them was transferred to another nursing home in different province, and another one did not want to participate in the study. Six of the elderly were not accessible because of

their permissions. Therefore, 105 of the elderly were enrolled into the study. A questionnaire, including questions on sociodemographic characteristics, diagnosis of any dermatological diseases, and clinical history, was administered to the elderly patients. This form was developed using available relevant literature. The form was completed during face-to-face interviews between the clinical staff and elderly patients. The medical and nursing staff assisted us in completing the questionnaires for elderly patients with psychiatric and neurological disorders. Two dermatology specialists visited the nursing homes to examine the elderly patients. Skin diseases were diagnosed and classified. No invasive procedures were used on the elderly patients.

The study was performed over 1 month. The elderly patients were examined with the naked eye in a well-lit environment. Permission was obtained from the relevant government agencies. The ethics committee approval was obtained for this study.

### Evaluation of data

SPSS for Windows 20 statistical program was used to create the database and for statistical analysis. The Pearson Chi-square and Fisher's Exact Test were used to assess statistical significance.  $p < 0.05$  was the accepted limit for significance.

## RESULTS

Details of the elderly patients enrolled in the study are summarized in Table 1. Of the 105 elderly patients, 64 (61.0%) were male and 41 (39.0%) were female. Twenty-two (21.0%) were literate and 21 (20.0%) were illiterate. Of them, 48 (45.7%) had completed first-secondary education, 10 (9.5%) had completed high school, and only 4 (3.8%) had completed college/university. Eighteen (17.1%) elderly patients were married and 87 (82.9%) were unmarried (Table 1).

**Table 1.** Socio-demographic characteristics of elderly staying in nursing homes

Characteristics	n	%
<b>Gender</b>		
Female	41	39.0
Male	64	61.0
<b>Age (year)</b>		
60-79	54	51.4
≥80	51	48.6
<b>Education status</b>		
Illiterate	21	20.0
First-secondary education	48	45.7
High school	10	9.5
College	4	3.8
Literate	22	21.0
<b>Marital status</b>		
Marriage	18	17.1
Not marriage	87	82.9
<b>Child status</b>		
Not have child	25	23.8
Have child	80	76.2
<b>Smoking habits</b>		
Smoke	22	21.0
Not smoke	83	79.0
<b>Alcohol consumption</b>		
Use	4	3.8
Not use	101	96.2
<b>Duration of residencies</b>		
<2 years	51	48.6
≥ 2 years	54	51.4
<b>Fee payment status</b>		
Pay	61	58.1
Not pay	44	41.9

Evaluation of the residential history of the participants showed that 51 (48.6%) had stayed in nursing homes for less than 2 years, whereas 54 (51.4%) had stayed for ≥2 years. Sixty-one (58.1%) elderly patients were paying residential fees. With respect to children, 80 (76.2%) elderly patients had at least one child. Results from questions concerning the details of their habits were as follows: 22 (21.0%) elderly patients smoked and 83 (79.0%) did not smoke and 4 (3.8%) consumed alcohol and 101 (96.2%) did not consume alcohol (Table 1).

The results of examinations for skin diseases are summarized in Table 2. Examinations for skin diseases produced the following results: 45 (42.9%) elderly patients had tinea pedis, 2 (1.9%) had tinea manuum, 62 (59.0%) had tinea unguium, 17 (16.2%) had atopic dermatitis, 4 (3.8%) had contact dermatitis, 3 (2.9%) had lichen simplex chronicus, 42 (40%) had seborrheic dermatitis, 10 (9.5%) had stasis dermatitis, 82 (78.1%) had xerosis, 20 (19.0%) had pruritus, 60 (57.1%) had seborrheic keratosis, 45 (42.9%) had actinic keratoses, 2 (1.9%) had basal cell carcinoma, 17 (16.2%) had nail disorders [onychomycosis in 8 (7.6%), 1 (1.0%), nail pterygia, and nail dystrophy in 8 (7.6%)], 18 (17.1%) had callus, 5 (4.8%) had decubitus ulcer, 28 (26.7%) had senile purpura, 3 (2.9%) had vitiligo, 95 (90.5%) had lentigo, 1 (1.0%) had milium, 56 (53.3%) had dermatoheliosis, 6 (5.7%) had poikiloderma, 64 (61.0%) had senile angioma, 41 (39.0%) had fibroepithelial polyps, 1 (1.0%) had corn cutaneum, 10 (9.5%) had acne rosacea, 8 (7.6%) had senile comedones, 2 (1.9%) had lipoma, 2 (1.9%) had sebaceous hyperplasia, 1 (1.0%) had milium, and 1 (1.0%) had macular amyloidosis (Table 2).

With respect to systemic diseases, 59 (56.2%) elderly patients suffered from hypertension, 16 (15.2%) had diabetes mellitus, 16 (15.2%) had suffered a stroke, 14 (13.3%) had lung disease, 11 (10.5%) had coronary artery disease, 9 (8.6%) had dementia, 6 (5.7%) had Alzheimer's disease, 4 (3.8%) had some deafness, 3 (2.9%) had Parkinson's disease, and 5 (4.8%) had other diseases. Among the 105 participants, 26 (24.8%) had a previous history of skin diseases. Of these, 14 (13.5%) had atopic dermatitis, 8 (7.7%) had rosacea, 2 (1.9%) had vitiligo, and 1 (1.0%) had basal cell carcinoma, and 1 (1.0%) had seborrheic dermatitis of the elderly.



**Table 2.** Skin diseases in nursing homes

<b>Diagnosis</b>	<b>n=105</b>	<b>%</b>
<b>Fungal infections</b>		
Tinea unguium	62	59.0
Tinea pedis	45	42.9
Tinea manuum	2	1.9
<b>Dermatitis</b>		
Atopic dermatitis	17	16.2
Contact dermatitis	4	3.8
Lichen simplex chronicus	3	2.9
Seborrheic dermatitis	42	40.0
Stasis dermatitis	10	9.5
<b>Xerosis</b>	82	78.1
<b>Pruritus</b>	20	19.0
<b>Skin tumors</b>		
Skin tags	41	39.0
Seborrheic keratosis	60	57.1
Actinic keratosis	45	42.9
Basal cell carcinoma	2	1.9
<b>Nail disorders</b>	17	16.2
<b>Disorders due to physical factors</b>		
Callus	18	17.1
Pressure sores	5	4.8
<b>Skin changes due to ultraviolet radiation</b>		
Senile purpura	28	26.7
Dermatoheliosis	56	53.3
Civatte poikiloderma	6	5.7
Senile comedone	8	7.6
<b>Pigmentary disorders</b>		
Vitiligo	3	2.9
Lentigo	95	90.5
<b>Others</b>		
Miliaria	1	1.0
Senile angioma	64	61.0
Corn cutaneum	1	1.0
Acne rosacea	10	9.5
Lipom	2	1.9
Sebase hyperplasia	2	1.9
Milium	1	1.0
Macular amiloidosis	1	1.0

Twenty-two (21.0%) elderly patients were bed-ridden. A significant difference was detected in the occurrence of tinea pedis and decubitus ulcers ( $p=0.032$  and  $p=0.000$ , respectively) in these patients compared with ambulatory patients.

No significant differences were detected in the occurrence of xerosis and tinea unguium ( $p>0.05$ ) between these two sets of patients.

Tinea unguium was observed in 17 (41.5%) female and 45 (70.3%) male patients, whereas 28 (68.3%) female and 28 (43.8%) male patients had dermatoheliosis. Forty-one (100%) female and 54 (84.4%) male patients had lentigo.

The prevalences of tinea unguium, dermatoheliosis, and lentigo were higher in males ( $p=0.004$ ,  $p=0.017$ , and  $p=0.006$  respectively).

In terms of age, there was significant differences between the early (60- 79 years old) and advanced geriatric ( $\geq 80$  years) age groups in the prevalences of seborrheic keratosis, senile purpura, dermatoheliosis ( $p=0.010$ ,  $p=0.000$ , and  $p=0.031$  respectively).

There was no significant correlation between the observed diseases and the alcohol consumption and smoking habits, educational status, and the duration of residencies.

**DISCUSSION**

Aging is a physiological process during which many changes occur in the structure and function of the skin. Thinning of the skin, increased dryness and roughness, appearance of wrinkles, decreased skin elasticity, and increased incidence of benign or malignant formations are considered to be part of the natural aging process. The cell renewal rate also decreases in older skin (15).

Lentigo was identified as the most common skin disease in our study, with almost 90.5% of the elderly patients suffering from it. This is in contrast to a previous study that reported the frequency of lentigo to be only 0.8% in elderly patients residing in nursing homes (9). A reason for the high frequency of lentigo in the current study is that majority of the elderly population had type 2 skin colour. Their livelihood were tobacco during youth and also their swimming habits because of the province’s situation.

Xerosis (78.1%) was the second most common skin disease in our study. According to the literature, the frequency of xerosis ranges from 1.5% to 58.3% (7,9,11,16) (Table 3). The frequency of xerosis was higher in the elderly patients residing in nursing home in our study than in those reported previously. Possible explanations for this difference could be linked to the bathroom habits of the elderly patients and the prevailing climatic conditions.

**Table 3.** Comparison of skin diseases in nursing homes in USA, Southern Taiwan, Central Japan, Hong Kong, Australia and Turkey

Authors	Country	Fungal infections (n/%)	Dermatitis (n/%)	Xerosis (n/%)	Pressure sores (n/%)	Skin cancers (n/%)	Lentigo (n/%)
Norman <sup>16</sup>	USA	151/9.7	569/36.6	772/49.6	-/-	353/22.7	-/-
Smith et al. <sup>7</sup>	Southern Taiwan	245/61.6	29/7.3	232/58.3	7/1.8	1/0.3	-/-
Smith et al. <sup>11</sup>	Central Japan	6/4.4	2/1.5	2/1.5	1/0.7	-/-	-/-
Chan <sup>9</sup>	Hong Kong	42/16.4	51/19.7	47/18.3	8/3.1	2/0.8	2/0.8
Smith et al. <sup>10</sup>	Australia	87/24.2	32/8.9	106/29.5	-/-	14/4.9	-/-
Kilic et al. <sup>13</sup>	Turkey	217/49.7	33/11	136/45.3	3/0.7	-/-	-/-
<b>Our study</b>	Turkey	72/68.5	60/57.1	82/78.1	5/4.8	2/1.9	95/90.5



Senile angioma 64 (61.0%) was the third most common skin disease that was observed in the elderly patients in our study. The frequency of senile angioma was 20.3% in Kiliç et al.'s study conducted in Turkey and 47.2% in Tseng's study conducted in Southern Taiwan (8,13).

The frequency of tinea pedis found in the present study was similar to that reported in other studies (7,8). The main difference was the more frequent occurrence of tinea unguium in males in our study than that reported in a study conducted in Australia. The frequency of tinea pedis was 42.9% and was similar to that reported in a study conducted in Taiwan (7,8). It was, however, higher than results from studies conducted in Hong Kong (9), Australia (10), and Japan (11).

There was also a significant difference in the occurrence of tinea pedis between bedridden and non-bedridden patients ( $p=0.032$ ). This was in agreement with the results of the study conducted by Smith et al. who detected an 18-fold increased risk of tinea unguium in the elderly population (10).

Seborrheic keratosis (57.1%) was the fifth most common skin disease in our study. According to the literature the frequency of seborrheic keratosis ranges from 0.7% to 99.4% (8,9,11,13).

Pruritus was identified in approximately one quarter of the elderly patients (19.0%) in our study; a frequency that was higher than the results of a study conducted in Taiwan. The frequency of pruritus was higher in the elderly patients residing in nursing home

in our study than a study performed in Turkey (13).

The frequency of contact dermatitis was 3.8% in our study, a result similar to that of a study performed in Hong Kong (9).

Pressure ulcers were observed 4.8% in our study. Here a significant difference was observed in the occurrence of decubitus ulcers between the bedridden and non-bedridden elderly patients ( $p=0.000$ ). Twenty-two (21.0%) elderly patients were bedridden, of which approximately 25% suffered from decubitus ulcers. Our results contrast with the frequencies of 1.8% and 0.7% observed in studies conducted in Taiwan and Japan, respectively (7,11).

Basal cell carcinoma was observed in only two elderly (1.9%) patients, and its frequency was lower than that reported in a study conducted in Australia (10). The risk of basal cell carcinoma is increasing in the Muğla province where exposure to strong sunlight occurs during a large part of the year.

This study is only the second study to evaluate the prevalence of skin diseases in the elderly patients residing in nursing homes in Turkey. It is the first study evaluating the prevalence of skin diseases in the elderly patients residing in nursing homes in Southwest Anatolia. The information obtained should contribute to epidemiological data to determine the prevalence of skin diseases observed in the elderly population in nursing homes in this area. This knowledge may lead to the improvement of measures for preventing skin diseases in these patients.

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