Pattern of skin disorders in geriatrics

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Background
Geriatric health care is a universal concern, as the rise in life expectancy is usually accompanied by distinctive patterns of prevailing diseases. Rather few studies are available concerning geriatric skin disorders.

Aim
In this study, we tried to determine the frequency and pattern of dermatologic disorders in a geriatric population.

Patients and methods
This is a retrospective study using the database of outpatient clinics of the Department of Dermatology, Venereology, and Andrology, Assiut University. All patients, aged 65 years and older, with newly diagnosed skin disorders were included with no exclusion criteria.

Results
The study included 946 patients, who were classified according to their age into three groups. The most common group of diseases was dermatitis and eczema, representing 41.86%, followed by skin infections (24.0%) (mainly viral). Papulosquamous disorders showed statistically significant increase in males, whereas bullous disorders and disorders of skin appendages showed statistically significant increase in females. Autumn showed a statistically significant increase in disorders of skin appendages compared with other seasons.

Conclusion
Elderly patients showed a specific pattern of skin disorder distribution, with the eczemas and infections representing more than 65% of the patients' diagnoses. Accordingly, the type of dermatological care needed for the geriatrics is different from that of the other age groups.

Keywords:
aging, geriatrics, skin

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Introduction

Geriatric well-being has become a universal concern; however, relatively limited studies are present concerning geriatric dermatoses [1]. Population aging and increases in life expectancy are certainly accompanied by different patterns of common diseases. The pattern of skin changes seen in elderly population may be distinctive in comparison with general population [2].

Elderly patients often have multiple medical problems, so they often use numerous medications, which adds to dermatological morbidity [3]. The aging skin of humans is accompanied by several histological changes ranging from diminished stratum corneum rejuvenation to a flattening of the dermo–epidermal junction, a marked decrease in elasticity, and degeneration of the dermal connective tissue due to a shrinkage and disorganization of its main extracellular matrix components [4]. These histological changes are reflected clinically in the form of increase in roughness, wrinkling, and skin laxity, in addition to other uncommon presentations of dermatologic disorders [5].

Two types of skin aging exist: intrinsic aging is called chronological aging, which is a sequence of molecular and biochemical degenerative changes as a result of time flow and advancement into greater age [6], and extrinsic aging is a result of lifestyle and environmental factors. It mostly results owing to excessive exposure to ultraviolet light. It has been proposed that more than 80% of facial aging is owing to chronic sun exposure [7].

Eczema is one of the commonest skin disorders reoprted in geriatric population. Elderly patients are more susceptible to minor ailments, as a result of applying irritant herbal creams, which lead to eczema. Moreover, it may occur from changes in temperature and contact with various allergens in their daily occupation [8]. Atopic dermatitis arising primarly in elders is an unusual form of the disease that characteristically affects face, neck, and trunk and

spares the flexural areas. Eczema is often erythrodermic in geriatric population [9].

Pruritus is another common skin problem in elderly. Its frequency is higher in autumn and lower in spring because of the higher humidity in the latter. It is explained by reduced skin ability to hold water and decreased epidermal hydration during the process of aging, which leads to marked xerosis and skin dryness [8].

In elderly people, with advancing age, diminished personal care and immunologic functions are typically responsible for the increased prevalence of skin infections, especially fungal infections [7]. Scabies diagnosis can be missed in elderly as its presentation could be atypical where it presents with widespread pruritus with fewer lesions [8].

Elders have an increased liability to certain autoimmune skin disorders such as bullous pemphigoid, and drug-induced autoimmune skin eruptions due to aging of the skin immunological system [10]. Lichen sclerosus presents a higher risk of squamous cell carcinoma in old patients. Tumor-associated skin diseases occur more frequently in elders and have a poorer prognosis [11].

Therefore, we aimed to study the frequency and pattern of dermatologic diseases in elderly patients, in an attempt to identify the proper management strategy required for optimum geriatric's skin care.

Patients and methods

In this hospital-based retrospective study, all included patients aged 65 years and older with skin disorders were recruited from those attending the outpatient clinic in the Dermatology, Venereology, and Andrology Department, Assiut University Hospital, during the period from June 2011 to May 2018. The study was approved by Assiut Faculty of medicine, Ethics Committee (ID: 17100025). Participants signed a written informed consent after a detailed explanation of the study was given.

Diagnoses were recorded and categorized in accordance with the International Statistical Classification of Diseases and Related Health Problems, 10th Revision (WHO, 2010) and Rook Rook's Textbook of Dermatology ninth edition [12] (Table 1).

Date entry and analysis were performed using SPSS, version 19 (Statistical Package for Social Science, IBM SPSS Statistics for Windows, Version 19.0. Armonk, NY: IBM Corp). Percentages and frequencies were calculated, and χ^2 statistical test was performed to compare between qualitative variables. *P* value less than 0.05 was considered statistically significant.

Results

This study included data of 946 patients' registered files. Male patients represented 73% of study population compared with 27% females. Their age range was 65–95 years, with mean ± SD of 69.23 ± 5.586 years. Patients were classified into three age groups: group I (65–70 years old) included 734 patients, group II (71–75 years old) included 122 patients, and group III (>75 years old) included 90 patients.

The most common reported group of diseases among studied population was eczemas (41.86%) followed by infections of the skin and subcutaneous tissue (24.00%). The other skin disorders' percentages are shown in Table 2. Viral skin infection represented a statistically significant increase compared with other types of infections (*P* = 0.000) (Table 3).

There is no detected statistically significant difference in the distribution of skin diseases among the three age groups except for eczemas which are more common in the second age group (71–75 years old). Bullous disorders and disorders of skin appendages were detected more frequently in the oldest group of patients (>75 years old) (Table 4).

We reported a statistically significant difference in disease distribution between males and females in the bullous disorders and disorders of skin appendages, which were more frequent in females (*P* = 0.001 and 0.000, respectively), and also papulosquamous disorders were more frequent in males (*P* = 0.004) (Table 5).

Elderly patients pursued medical help for their skin disorders throughout the year, with slight increase in the summer (Fig. 1). Seasonal variation showed no statistically significant difference across the seasons among study population except for autumn which showed statistically significant increase in disorders of skin appendages (*P* = 0.009) (Table 6).

Discussion

Skin diseases represent not only a common cause of illness in older population but also a public health concern in developing countries. Skin changes in the elders are typically caused by either natural aging process or pathological dermatological conditions [13].

Table 1 Disease groups

Bullous disorders

Bullous pemphigoid, Darier disease, pemphigoid, pemphigus foliaceus, and pemphigus vulgaris

Disorders of skin appendages

Acne form eruption, acne keloid, acne vulgaris, folliculitis, hair loss, rosacea, and miliaria

Dermatitis and eczema

Allergy, asteatotic eczema, atopic dermatitis, chronic dermatitis, chronic eczema, chronic itching, chronic urticaria, contact dermatitis, contact eczema, crackles, dermatitis, dermatitis herpetiform, discoid eczema, disseminated eczema, drug eruption, eczema, hyperkeratotic eczema, hyperkeratotic fissures, infected eczema, intertrigo, itching, lichen simplex chronicus, photo contact dermatitis, pruritus, pityriasis alba, seborrheic dermatitis, senile eczema, senile itching, solar dermatitis, venous eczema, and uremic itching

Infections of the skin and subcutaneous tissue

Abscess, bacterial infection, boils, candidal infection, candidal intertrigo, cellulitis, common wart, fungal infection, genital wart, herpes zoster, impetigo, infected wart, interdigital candidiasis, leprosy, multiple abscesses, onychomycosis, pediculosis, plane wart, planter wart, post herpes zoster, post herpetic neuralgia, pyogenic infection, scabies, tinea circinate, tinea cruris, tinea pedis, and tinea versicolor

Neoplastic, proliferative and infiltrative disorders affecting the skin

Basal cell carcinoma, Bowen's disease, fibroma, lymphoma, malignant melanoma, mycosis fungoides, pigmented basal cell carcinoma, rodent ulcer, and skin tag

Papulosquamous disorders

Dandruff, elephantine psoriasis, hypertrophic lichen, lichen planus, pityriasis rosea, and psoriasis vulgaris

Radiation related disorders of the skin and subcutaneous tissue

Actinic cheilitis, actinic keratosis, actinic reticuloid, and ulcer

Systemic disease and the skin

Aphthous ulcer and oral ulcer

Urticaria and erythema

Acute urticaria, allergic dermatitis, erythema, erythema nodosum, erythema nodularis, erythroderma, papular urticaria, and urticaria

Other disorders of the skin and subcutaneous tissue

Callosity, chilblain, discoid lupus erythematosus, dryness, follicular hyperkeratosis, hyperkeratosis, hypopigmented lesions, ichthyosis, idiopathic guttate melanosis, lentigines, macular amyloid, melasma, panniculitis, pigmentation, post eczema, postinflammatory hyperpigmentation, postneurolytic lesion, postulcer, pyogenic granuloma, seborrheic keratosis, senile lentigines, universal vitiligo, vasculitis, vitiligo, and xerosis

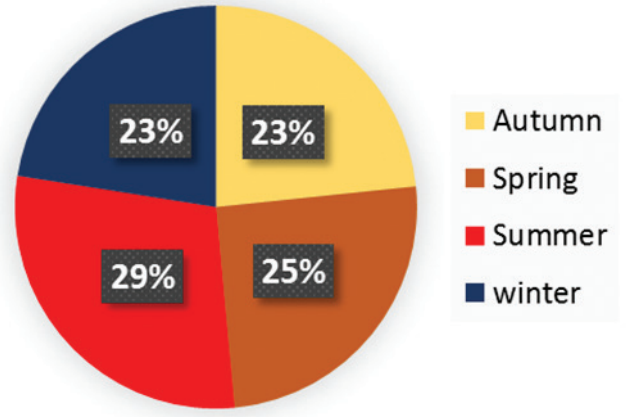
Table 2 Distribution of skin disorders among studied population

Classification	Frequency	Percent
Infections of skin and subcutaneous tissue	227	24.0
Bullous disorders	25	2.64
Dermatitis and eczema	396	41.86
Papulosquamous disorders	127	13.42
Systemic disease and skin	4	0.42
Urticaria and erythema	44	4.65
Radiation associated disorders of skin and subcutaneous tissue	6	0.63
Disorders of the skin appendages	21	2.22
Neoplastic, proliferative and infiltrative skin disorders	18	1.90
Other disorders of skin and subcutaneous tissue	78	8.25
Total	946	100

Table 3 Types of skin infection among participants

Type of infection	*n* (%)
Bacterial	31 (13.66)
Fungal	52 (22.91)
Parasitic	25 (11.01)
Viral	119 (52.42)

Figure 1



Distribution of subjects between different seasons.

Aged skin displays deterioration in its normal functions, such as cell renewal capacity, wound healing, immune competence, and DNA repair capacity, which is definitely responsible for the altered pattern of cutaneous disorders in elderly population compared with general population [14]. Therefore, the kind of dermatological care required for the elderly population is different from that of other age groups.

Studying 946 geriatric patients aged 65 years and older showed the commonest disease category reported was 'dermatitis and eczema' (41.86%). A similar study reported this as the most common condition, but with higher percent in Taiwan (58.7%)[1] and a lower disease

Table 4 Disease pattern among studied population according to age group

Diseases categories	Group I	Group II	Group III	*P*
Infections of the skin and subcutaneous tissue				
Frequency	176	28	23	0.908
Percent	23.98	22.95	25.56	
Bullous disorders				
Frequency	18	3	4	0.534
Percent	2.45	2.46	4.44	
Dermatitis and eczema				
Frequency	307	53	36	0.000*
Percent	41.83	43.44	40.00	
Papulosquamous disorders				
Frequency	96	20	11	0.573
Percent	13.08	16.39	12.22	
Systemic disease and the skin				
Frequency	3	1	0	0.656
Percent	0.41	0.82	0.00	
Urticaria and erythema				
Frequency	34	5	5	0.882
Percent	4.63	4.10	5.56	
Radiation associated disorders of skin and subcutaneous tissue				
Frequency	5	1	0	0.722
Percent	0.68	0.82	0.00	
Disorders of the skin appendages				
Frequency	14	2	5	0.064
Percent	1.91	1.64	5.56	
Neoplastic, proliferative and infiltrative disorders affecting the skin				
Frequency	15	0	3	0.166
Percent	2.04	0.00	3.33	
Other disorders of skin and subcutaneous tissue				
Frequency	66	9	3	0.208
Percent	8.99	7.38	3.33	

*: *P* value is statistically significant

Table 5 Disease pattern among studied population according to sex

Diseases groups	Male	Female	*P*
Infections of skin and subcutaneous tissue			
Frequency	167	60	0.909
Percent	24.03	23.90	
Bullous disorders			
Frequency	14	11	0.001*
Percent	2.01	4.38	
Dermatitis and eczema			
Frequency	301	95	0.200
Percent	43.31	37.85	
Papulosquamous disorders			
Frequency	107	20	0.004*
Percent	15.40	7.97	
Systemic disease and the skin			
Frequency	3	1	0.958
Percent	0.43	0.40	
Urticaria and erythema			
Frequency	28	16	0.114
Percent	4.03	6.37	
Radiation associated disorders of skin and subcutaneous tissue			
Frequency	4	2	0.688
Percent	0.58	0.80	
Disorders of the skin appendages			
Frequency	8	13	0.000*
Percent	1.15	5.18	
Neoplastic, proliferative and infiltrative disorders affecting the skin			
Frequency	16	2	0.143
Percent	2.30	0.80	
Other disorders of skin and subcutaneous tissue			
Frequency	47	31	0.004*
Percent	6.76	12.35	

*: *P* value is statistically significant

incidence in geriatric population in Singapore (35.3%) [15] and Turkey (30.1%) [5,16], whereas another Egyptian study in lower Egypt reported 20.5% [17]. This could be attributed to the fact that nummular eczema and asteatotic eczema are associated with temperature changes and low humidity, so this may explain increasing percentage in this study in upper Egypt compared with lower Egypt [18].

The second most common category found in our study was 'infections of the skin and subcutaneous tissue' (24%). Similarly, this group represented the second common in two Turkish studies (26.8 and 29.8%) [5,16]. On the contrary, infection was the commonest disease group in another study, representing 68.6% in lower Egypt [17]. A high percentage of skin infection in elderly people can be contributed to diminished personal care, slow epidermal turnover, and deteriorated immunologic functions [19]. Reduced immune competence in the elderly may be attributed to aging process and debilitating systemic diseases, which provide a larger opportunity for the progression of microbial infections in those patients [20].

Viral skin infection in this study was found to be the commonest type of skin and subcutaneous tissue infections (52.42%). However, other studies reported fungal infection as the most common type [5,15,17]. This could be explained by the nature of the place of the study, being a tertiary health care center, so it serves more severe cases.

Bullous disorders were more common in group III (4.44%) compared with groups I and II (2.45 and 2.46%, respectively). Being a disease of elder population, especially bullous pemphigoid, could explain this finding [21].

Sex affected the disease distribution, where papulosquamous disorders showed a statistically significant increase in males compared with females (P = 0.004). On the contrary, no sexual predilection was reported in a study by Shilpa and Pandit in all papulosquamous disorder distribution, except for male preponderance seen in psoriasis and lichen striatus, and female preponderance with pityriasis rubra pilaris [22,23]. In the present study, bullous disorders (P = 0.001) and disorders of

Table 6 Disease distribution among studied population according to different seasons

Diseases groups	Winter	Spring	Summer	Autumn	*P*
Infections of skin and subcutaneous tissue					
Frequency	55	65	60	47	0.336
Percent	25.82	27.31	21.90	21.27	
Bullous disorders					
Frequency	5	4	8	8	0.608
Percent	2.35	1.68	2.92	3.62	
Dermatitis and eczema					
Frequency	81	99	120	96	0.577
Percent	38.03	41.60	43.80	43.44	
Papulosquamous disorders					
Frequency	33	27	37	30	0.642
Percent	15.49	11.34	13.50	13.57	
Systemic disease and the skin					
Frequency	1	0	2	1	0.650
Percent	0.47	0.00	0.73	0.45	
Urticaria and erythema					
Frequency	9	12	11	12	0.868
Percent	4.23	5.04	4.01	5.43	
Radiation associated disorders of skin and subcutaneous tissue					
Frequency	1	2	2	1	0.939
Percent	0.47	0.84	0.73	0.45	
Disorders of the skin appendages					
Frequency	1	5	4	11	0.009
Percent	0.47	2.10	1.46	4.98	
Neoplastic, proliferative and infiltrative disorders affecting the skin					
Frequency	4	6	3	5	0.660
Percent	1.88	2.52	1.09	2.26	
Other disorders of skin and subcutaneous tissue					
Frequency	23	18	27	10	0.073
Percent	10.80	7.56	9.85	4.52	

skin appendages (P = 0.000) showed a significant increase in females as compared with males. Similarly, Yalçın *et al*. [5], reported disorders of skin appendages in female (1.3%) compared with male (0.6%) only. Moreover, Zhao and Murrell [24] noted that bullous disorders were associated with higher disease incidence in females compared with males.

According to seasonal variation, only autumn showed statistical significant increase in disorders of skin appendages group (P = 0.009). Variations in both environmental and skin temperatures and the equilibrium between the sebum molecular components affect the viscosity of lipids at the skin surface and the functions of all skin appendages [25]. However, Kardeş [26] reported psoriasis as one of the most common diseases in the late winter/early spring.

No statistical significant difference was detected among other disease groups of the study according to seasonal variation all over the year. On the contrary, a Korean study claimed that skin symptoms were worse in winter, spring, and autumn compared with summer. Regarding monthly patterns, the skin symptoms were the worst in April [27]. These results may be owing to the difference in our weather, especially in upper Egypt.

The geriatric population is growing continuously and presents many challenges for the government and society. More elders are being referred to dermatology clinics. Effective management of elderly patients necessitates a thorough understanding of the uniqueness of geriatric patients and prevalence of specific skin disorders in this group [28].

Conclusion

As elderly patients showed specific pattern of skin disorder distribution, with the eczemas and infections representing the majority of the patients' diagnoses, the type of dermatological care needed for the geriatrics is different from that for other age groups. Aiming to reach the 'successful aging', and active participation in life, geriatric skin care should be implied as a routine in health care units.

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Conflicts of interest

There are no conflicts of interest.

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