

Epidemiology of Dermatologic Conditions Among Elderly Patients at the Ambulatory Care Service of a Tertiary Hospital in Metro Manila from 2014 to 2018: A Five-year Review



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ABSTRACT

Introduction Ageing is a progressive degenerative process that leads to decline in the physiological function and reserve capacity of the whole body system, including the skin. As the Filipino geriatric population escalates, the incidence of skin diseases becomes more widely acknowledged. Presently, there are only a few studies that have been reported locally describing the nature of geriatric dermatoses.

Objectives To describe the epidemiology of dermatologic conditions among Filipino elderly patients that prompted a consult at the ambulatory care service of a tertiary hospital between the years 2014 and 2018.

Methodology All Filipino elderly patients with dermatological conditions seen at the dermatology ambulatory care service from 2014 to 2018 was studied through a single-center, retrospective, descriptive study.

Results Elderly patients comprised 16.76% of the total patients who sought dermatological consultation

at the ambulatory care service of the hospital. Majority of the patients were females. Xerosis/xerotic eczema (10.02%) was the most frequently encountered skin disease. The top 10 diseases were irritant contact dermatitis (7.00%), lichen simplex chronicus (6.67%), psoriasis (5.56%), seborrheic dermatitis (5.24%), allergic contact dermatitis (4.37%), tinea pedis (3.51%), herpes zoster (3.49%), seborrheic keratosis (3.23%), and milia (2.54%). Based on the nature of disease, inflammatory condition was the most commonly seen.

Conclusion Dermatological disorders are ubiquitous in older people with a significant impact on the quality of life. Inflammatory dermatoses comprise a wide array of skin diseases as evidenced in this study, which account for most of the cutaneous problems in the elderly. Similar to other epidemiological studies, xerosis/xerotic eczema still comprises majority of the cases prompting elderly patients to seek a dermatological consultation.

Keywords elderly, geriatric, dermatologic diseases, ambulatory, epidemiology

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INTRODUCTION

Ageing is a progressive degenerative process that leads to decline in the physiological function and reserve capacity of the whole body system, including

the skin.[1] The mechanism of ageing skin is seen as a composite of two biological processes: extrinsic and intrinsic stimuli that affect the structural and functional integrity of the ageing skin giving rise to a spectrum of diseases. Extrinsic factors are brought about by the skin's interaction with the external environment and this includes UV light exposure, smoking, and various environmental insults; whereas, intrinsic ageing is a process of natural senescence. [2] With a reduction in functional capacity of the skin in ageing, there is increased susceptibility to cutaneous problems, therefore, subsequently leading to the development of dermatoses.[3]

In the Philippines, the 60 years and older population is expected to increase by 4.2%, whereas the 80 years and older population is expected to increase by 0.4% from 2010 to 2030. [4] As the life expectancy of Filipinos gets older, we expect that there would be concomitant increase in the number of geriatric dermatoses. Along with that, comorbidities could also impact skin health. Hence, these could put a lot of financial and psychological stress that could negatively impact the quality of life of elderly patients.[3]

The management of cutaneous diseases in the elderly population has become an important area of consideration today. The increased vulnerability of the skin among the geriatric population is an upcoming health issue in the context of demographic changes, the increasing number of multi-morbid patients, and the complexity of care.[5] The skin being the largest organ of the body, oftentimes serves as the indicator of general well-being of internal health. Knowing what goes beyond the ageing skin is essential for proper diagnosis and management of geriatric dermatoses.

The definition of characteristic pattern and frequency of dermatologic diseases among elderly patients is important in strategizing therapeutic and preventive healthcare interventions. Likewise, these skin diseases can lead to substantial morbidity that could affect the quality of life.[6] Because the burden of skin diseases in the elderly is rising and dermatological demands are becoming largely unmet, especially in our local setting, it is pivotal for health care providers to note the pattern of geriatric skin disorders.[7] Knowing the rate of various skin diseases is essential in order to come up with decisions concerning resource allocation for clinical care and research.

To the best of our knowledge, there are two studies published describing the nature of dermatological consultations among Filipino elderly patients.[8,9] However, these studies have been done decades ago; hence, the disease patterns during those times may no longer be reflective with the current changing times.

The main objective of this study is to describe the epidemiology of dermatological diseases among elderly patients prompting consult at the ambulatory care service of a tertiary hospital for the years 2014 up to 2018. It specifically aims to (1) describe the demographic characteristics of elderly patients with dermatological complaints, (2) determine the most common dermatological diseases according to the nature or etiology that prompted elderly patients to consult at the clinic, and (3) determine the top ten most common dermatological diseases warranting consultation according to gender.

METHODOLOGY

This is a single-center, retrospective, descriptive study of dermatological conditions of Filipino elderly patients, prompting consultation at the ambulatory care service of the University of Santo Tomas (UST) Hospital, Manila, Philippines from January 1, 2014 up to December 31, 2018. This study was approved by the Research Ethics Committee of the same hospital.

Included in the study were patients aged 60 years and older who were seen, managed, and attended to by the dermatology resident and/or consultant. Excluded were those who had skin conditions primarily attended by other specialists in the ambulatory care service but were not referred to and seen by the dermatology service, as well as those whose diagnosis were given by non-dermatologists.

Data were obtained from the dermatology daily outpatient master list and records of the said tertiary hospital. Variables reviewed and analyzed include demographic data of the patient (age, sex) and clinical dermatologic diagnosis given. The dermatological diagnoses were grouped according to the nature of disease as (1) inflammatory, (2) neoplasms including malignant, pre-malignant and benign, (3) vascular, (4) trauma and injuries, (5) infection which included those due to bacteria, fungal and viruses, and (6) infestations.

The data gathered were tabulated and descriptive statistics utilized for this study. Statistical analyses

were performed using Stata Statistical Software, Version 13, College Station, TX: StataCorp LP (2013). Descriptive statistics included mean, standard deviation, frequency, and percentage. Comparative analysis included z-test for the comparison of two independent proportions, while chi-square test of univariate frequency distribution was utilized to compare three or more independent proportions. Data were presented in graphs and tabulated using frequency distributions.

RESULTS

Demographic characteristics of elderly patients prompting a consult at the dermatology ambulatory care service

Number of elderly patients seen at the dermatology ambulatory care service

There were 49,323 patients seen by the dermatology staff members at the ambulatory care service of the UST Hospital, Manila, Philippines from January 1, 2014 up to December 31, 2018. A total of 8,268 patients were aged 60 years and above. They comprised 16.76% of the total patients who sought dermatological consult (Table 1).

Gender distribution of elderly patients with dermatological consultation

Of the 8,268 patients, 3,047 (36.85%) were male and 5,221 patients (63.15%) were female. The male:female ratio of elderly patients in our study was 1:1.71 (Figure 1).

The gender distribution according to age group of elderly patients with dermatological conditions is presented in Table 2. Elderly patients aged 60-69 years comprised 64.65% of the total number of patients seen, 24.06% of whom were males and 40.59% were females. Comparing these proportions, a z-score of -15.25 and a p-value of 0.0001 were estimated. These statistics indicate that the proportion of females who were 60-69 years old

and with dermatological conditions was statistically higher than males of the same age group. It is also notable that a similar finding was estimated for those who were 70-79 years old ($z=-9.58$, $p=0.0001$) and ≥ 80 years old ($z=-4.41$, $p=0.0001$), wherein the proportion of females with dermatological conditions in these age groups were statistically higher than their male counterparts (Table 2).

Profile of dermatological conditions among elderly patients seen at the ambulatory care service

Dermatological diseases according to nature/etiology in elderly patients

The dermatological diseases seen among elderly patients were clustered into groups, as presented in Figure 2. Based on the etiology/nature, the inflammatory group was the most common, accounting for 53.90%, the majority of which belonged to the papulosquamous subtype (44.34%) followed by urticaria, erythema and purpura (3.34%), pigmentary disorders (2.07%), pruritus and dysesthesia (1.73%), drug-related hypersensitivity reaction (1.12%), autoimmune vesiculobullous diseases (0.61%), disorders of appendages (0.53%), acneiform disorders (0.12%), and autoimmune connective tissue diseases (0.12%). Infectious diseases (24.19%) came second with fungal infections (10.53%) being the most common followed by viral (7.82%) and bacterial causes (5.84%). Third was neoplasm (12.09%) where most are benign (11.11%) followed by malignant (0.74%), then pre-malignant causes (0.24%). It was then followed by vascular (3.74%), other unclassified (2.45%), infestation (2.17%) and lastly, trauma and injuries (1.46%) (Table 3).

Frequency distribution of the various dermatological diseases of elderly patients

The different dermatological conditions of elderly patients who had consulted at the USTH

Table 1. Total number and percentage of Filipino elderly patients seen at the ambulatory care service from January 2014 to December 2018

| | 2014 | 2015 | 2016 | 2017 | 2018 | Total |
|---|---------------|---------------|---------------|---------------|---------------|---------------|
| Total Number of Patients | 10,393 | 10,184 | 9,288 | 9,571 | 9,887 | 49,323 |
| Number of Elderly Patients with Dermatological Condition | 1,566 | 1,708 | 1,672 | 1,582 | 1,740 | 8,268 |
| Percentage | 15.07% | 16.77% | 18.00% | 16.53% | 17.60% | 16.76% |

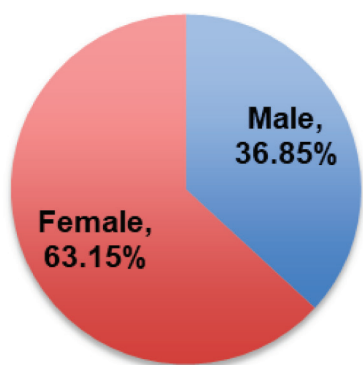


Figure 1. Gender distribution of Filipino elderly patients seen at the ambulatory care service from January 2014 to December 2018

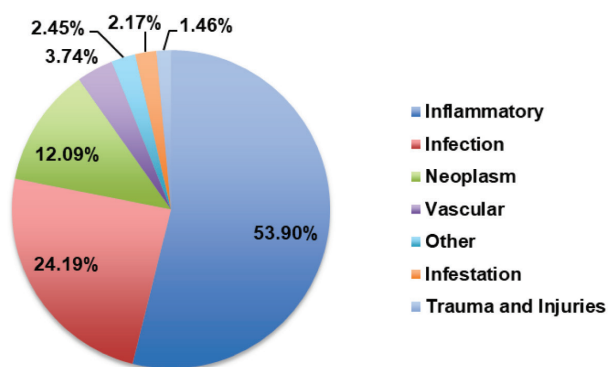


Figure 2. Percentage of the different groups of dermatological diseases according to nature/etiology among elderly patients at the ambulatory care service from January 2014 to December 2018.

Table 2. Gender distribution according to age group of Filipino elderly patients seen at the ambulatory care service from January 2014 to December 2018

| Age Groups | Male (n = 3,047) | | Female (n = 5,221) | | Test Statistic | p-value (Two-tailed) |
|-------------------|------------------|------------|--------------------|------------|---------------------|----------------------|
| | Frequency | Percentage | Frequency | Percentage | | |
| 60 – 69 years old | 1,989 | 24.06% | 3,356 | 40.59% | -15.25 [†] | 0.0001 |
| 70 – 79 years old | 812 | 9.82% | 1,451 | 17.55% | -9.58 [†] | 0.0001 |
| ≥80 years old | 246 | 2.98% | 414 | 5.01% | -4.41 [†] | 0.0001 |

*Significant at 0.05

†Significant at 0.01

Table 3. Frequency and percentage of dermatological diseases according to nature/etiology of Filipino elderly patients seen at the ambulatory care service from January 2014 to December 2018

| Dermatological diseases according to nature/etiology | Frequency | Percentage | 95% CI |
|--|-----------|---------------|-----------------|
| Inflammatory | 5,296 | 53.90% | 55.87% – 57.89% |
| <i>Papulosquamous and eczematous diseases</i> | 4128 | 44.34% | |
| <i>Urticaria, erythema, and purpura</i> | 311 | 3.34% | |
| <i>Pigmentary disorders</i> | 193 | 2.07% | |
| <i>Pruritus and dysesthesia</i> | 161 | 1.73% | |
| <i>Drug-related hypersensitivity reaction</i> | 104 | 1.12% | |
| <i>Autoimmune vesiculobullous</i> | 57 | 0.61% | |
| <i>Disorders of skin appendages</i> | 49 | 0.53% | |
| <i>Acneiform disorders</i> | 11 | 0.12% | |
| <i>Autoimmune connective tissue disease</i> | 5 | 0.05% | |
| Infection | 2,329 | 24.19% | 24.14% – 25.90% |
| <i>Fungal</i> | 980 | 10.53% | |
| <i>Viral</i> | 728 | 7.82% | |
| <i>Bacterial</i> | 544 | 5.84% | |

(Continued)

Table 3. Frequency and percentage of dermatological diseases according to nature/etiology of Filipino elderly patients seen at the ambulatory care service from January 2014 to December 2018 (Continued)

| Dermatological diseases according to nature/etiology | Frequency | Percentage | 95% CI |
|--|-----------|---------------|-----------------|
| Neoplasm | 1,125 | 12.09% | 11.43% – 12.75% |
| Benign | 1034 | 11.11% | |
| Malignant | 69 | 0.74% | |
| Pre-malignant | 22 | 0.24% | |
| Vascular | 348 | 3.74% | 3.35% – 4.13% |
| Infestation | 76 | 2.17% | 0.64% – 1.00% |
| Trauma and Injuries | 136 | 1.46% | 1.22% – 1.70% |
| Other | 228 | 2.45% | 2.15% – 2.79% |

Ambulatory Care Services are presented in Table 4. Results indicated that the most common inflammatory dermatological disease falls under the papulosquamous category (44.34%) of inflammatory diseases. These are xerosis or xerotic eczema (10.02%), followed by irritant contact dermatitis (7.00%), and lichen simplex chronicus (6.67%).

The second most prevalent dermatological conditions affecting elderly patients are those of infectious origin, which includes fungal, viral, and bacterial where tinea pedis (3.51%), herpes zoster (3.49%), and cellulitis (2.27%) were the most common, respectively. The third most common disease in elderly patients are the neoplastic dermatological conditions, which indicates that the most common malignant, pre-malignant, and benign conditions were basal cell carcinoma (0.57%), Bowen's disease (0.10%), and seborrheic keratosis (3.23%), respectively. Dermatological conditions of vascular origin indicated that stasis dermatitis (2.14%) was the most common. Arthropod bite (1.35%) was the most prevalent skin infestation among elderly patients while trauma-induced erosion or ulcer (0.43%) was the most prevalent trauma- or injury-related physical or chemical factor. For other unclassified diagnoses, keloid (1.03%) was also common among elderly patients.

Top 10 most common dermatological conditions among elderly patients

Among the isolated dermatological conditions, the 10 most prevalent diseases were xerosis or xerotic eczema (10.02%), irritant contact dermatitis (7.00%), lichen simplex chronicus (6.67%), psoriasis (5.56%), seborrheic dermatitis (5.24%), allergic contact dermatitis (4.37%), tinea pedis (3.51%),

herpes zoster (3.49%), seborrheic keratosis (3.23%), and milia (2.54%).

Among female elderly patients, the most prevalent were xerosis or xerotic eczema (6.16%), irritant contact dermatitis (4.53%), and lichen simplex chronicus (3.76%), while xerosis or xerotic eczema (3.87%), seborrheic dermatitis (3.13%), and lichen simplex chronicus (2.91%) were the most common among males.

A comparative analyses of the proportions of these dermatological diseases between males and females indicated that the proportions of xerosis or xerotic eczema ($z=5.05$, $p=0.0001$), irritant contact dermatitis ($z=5.44$, $p=0.0001$), lichen simplex chronicus ($z=2.25$, $p=0.024$), psoriasis ($z=4.89$, $p=0.0001$), allergic contact dermatitis ($z=5.61$, $p=0.0001$), herpes zoster ($z=3.13$, $p=0.002$), seborrheic keratosis ($z=4.99$, $p=0.0001$), and milia ($z=5.34$, $p=0.0001$) were statistically higher among females than males. However, analysis indicated that the proportion of seborrheic dermatitis ($z=-2.90$, $p=0.004$) was statistically higher among males (3.13%) than females (2.12%). Notably, the proportion of males (1.73%) and females (1.78%) with tinea pedis was not statistically different (Table 5).

DISCUSSION

Skin diseases become more prevalent as the ageing population rises globally, which directly influences the functional capacity and overall health.[10] The Philippines' population increased by over 35% over the last two decades with the older adult population (60 years and older) expected to overtake those aged 0–14 years old by 2065.[11] As the

Table 4. Frequency distribution of the various dermatological diseases of Filipino elderly patients seen at the ambulatory care service from January 2014 to December 2018

| Dermatological Diagnoses | Age Group | | | | | | Total | % | | |
|---|----------------------|-----|----------------------|-----|------------------|----|--------------|---------------|------------|--------------|
| | 60 – 69 Years Old | | 70 – 79 Years Old | | ≥80 Years Old | | | | | |
| | M | F | M | F | M | F | | | Male (%) | Female (%) |
| INFLAMMATORY | | | | | | | 5018 | 53.90% | | |
| Papulosquamous and eczematous diseases | | | | | | | 4,128 | 44.34% | | |
| <i>Xerosis/Xerotic Eczema</i> | 169 | 308 | 107 | 208 | 84 | 57 | 3.87% | 6.16% | 933 | 10.02% |
| <i>Irritant Contact Dermatitis</i> | 148 | 285 | 61 | 108 | 21 | 29 | 2.47% | 4.53% | 652 | 7.00% |
| <i>Lichen Simplex Chronicus</i> | 189 | 233 | 57 | 90 | 25 | 27 | 2.91% | 3.76% | 621 | 6.67% |
| <i>Psoriasis</i> | 166 | 243 | 34 | 62 | 2 | 11 | 2.17% | 3.39% | 518 | 5.56% |
| <i>Seborrheic Dermatitis</i> | 171 | 101 | 87 | 63 | 33 | 33 | 3.13% | 2.12% | 488 | 5.24% |
| <i>Allergic Contact Dermatitis</i> | 96 | 203 | 24 | 64 | 6 | 14 | 1.35% | 3.02% | 407 | 4.37% |
| <i>Photocontact Dermatitis</i> | 71 | 83 | 9 | 34 | 5 | 19 | 0.91% | 1.46% | 221 | 2.37% |
| <i>Nummular Eczema</i> | 23 | 37 | 20 | 17 | 6 | 6 | 0.53% | 0.64% | 109 | 1.17% |
| <i>Exfoliative Dermatitis</i> | 46 | 16 | 26 | 5 | 4 | 2 | 0.82% | 0.25% | 99 | 1.06% |
| <i>Pityriasis Rosea</i> | 8 | 17 | 2 | 4 | 4 | 0 | 0.15% | 0.23% | 35 | 0.38% |
| <i>Dyshidrotic Eczema</i> | 9 | 7 | 0 | 7 | 5 | 1 | 0.15% | 0.16% | 29 | 0.31% |
| <i>Psoriasiform Dermatitis</i> | 7 | 0 | 0 | 0 | 0 | 0 | 0.08% | 0.00% | 7 | 0.08% |
| <i>Parapsoriasis</i> | 3 | 0 | 0 | 0 | 0 | 0 | 0.03% | 0.00% | 3 | 0.03% |
| <i>Acrodermatitis</i> | 0 | 1 | 0 | 0 | 0 | 1 | 0.00% | 0.02% | 2 | 0.02% |
| <i>Pityriasis Lichenoides Chronica</i> | 1 | 0 | 0 | 0 | 0 | 0 | 0.01% | 0.00% | 1 | 0.01% |
| <i>Radiation Dermatitis</i> | 0 | 0 | 0 | 0 | 0 | 1 | 0.00% | 0.01% | 1 | 0.01% |
| <i>Sebopsoriasis</i> | 1 | 0 | 0 | 0 | 0 | 0 | 0.01% | 0.00% | 1 | 0.01% |
| <i>Radiation Dermatitis</i> | 0 | 0 | 0 | 0 | 0 | 1 | 0.00% | 0.01% | 1 | 0.01% |
| Urticarias, erythema and purpura | | | | | | | | | 311 | 3.34% |
| <i>Intertrigo</i> | 13 | 45 | 5 | 23 | 0 | 12 | 0.19% | 0.86% | 98 | 1.05% |
| <i>Miliaria</i> | 10 | 33 | 4 | 8 | 0 | 1 | 0.15% | 0.45% | 56 | 0.60% |
| <i>Acute Urticaria</i> | 17 | 24 | 4 | 9 | 0 | 0 | 0.23% | 0.35% | 54 | 0.58% |
| <i>Erythema Multiforme</i> | 10 | 10 | 4 | 9 | 0 | 5 | 0.15% | 0.26% | 38 | 0.41% |
| <i>Vasculitis</i> | 3 | 11 | 4 | 14 | 0 | 3 | 0.08% | 0.30% | 35 | 0.38% |
| <i>Chronic Urticaria</i> | 5 | 6 | 0 | 2 | 1 | 0 | 0.06% | 0.09% | 14 | 0.15% |
| <i>Angioedema</i> | 3 | 0 | 0 | 0 | 0 | 2 | 0.03% | 0.02% | 5 | 0.05% |
| <i>Erythema Annulare Centrifugum</i> | 0 | 0 | 0 | 3 | 0 | 1 | 0.00% | 0.04% | 4 | 0.04% |
| <i>Erythema Nodosum</i> | 0 | 2 | 0 | 1 | 0 | 0 | 0.00% | 0.03% | 3 | 0.03% |
| <i>Miliaria Pustulosa</i> | 0 | 2 | 0 | 0 | 0 | 0 | 0.00% | 0.02% | 2 | 0.02% |
| <i>Morbilliform Eruption Secondary to Viral Infection</i> | 1 | 0 | 0 | 0 | 0 | 0 | 0.01% | 0.00% | 1 | 0.01% |
| <i>Physical Urticaria</i> | 0 | 1 | 0 | 0 | 0 | 0 | 0.00% | 0.01% | 1 | 0.01% |

(Continued)

Table 4. Frequency distribution of the various dermatological diseases of Filipino elderly patients seen at the ambulatory care service from January 2014 to December 2018 (Continued)

| Dermatological Diagnoses | Age Group | | | | | | Total | % | | |
|---|----------------------|----|----------------------|----|------------------|----|-------|-------|------------|--------------|
| | 60 – 69 Years Old | | 70 – 79 Years Old | | ≥80 Years Old | | | | | |
| | M | F | M | F | M | F | | | Male (%) | Female (%) |
| Autoimmune vesiculobullous diseases | | | | | | | | | 57 | 0.61% |
| <i>Bullous Pemphigoid</i> | 22 | 3 | 10 | 1 | 1 | 0 | 0.35% | 0.04% | 37 | 0.40% |
| <i>Dermatitis Herpetiformis</i> | 2 | 0 | 8 | 0 | 0 | 0 | 0.11% | 0.00% | 10 | 0.11% |
| <i>Linear IgA Dermatoses</i> | 7 | 0 | 1 | 0 | 0 | 0 | 0.09% | 0.00% | 8 | 0.09% |
| <i>Pemphigus Vulgaris</i> | 2 | 0 | 0 | 0 | 0 | 0 | 0.02% | 0.00% | 2 | 0.02% |
| Autoimmune connective tissue diseases | | | | | | | | | 5 | 0.05% |
| <i>Dermatomyositis</i> | 2 | 0 | 0 | 1 | 0 | 0 | 0.02% | 0.01% | 3 | 0.03% |
| <i>Scleroderma</i> | 0 | 2 | 0 | 0 | 0 | 0 | 0.00% | 0.02% | 2 | 0.02% |
| Pigmentary Disorders | | | | | | | | | 193 | 2.07% |
| <i>Post-Inflammatory Hypo- or Hyperpigmentation</i> | 22 | 45 | 6 | 18 | 7 | 4 | 0.38% | 0.72% | 102 | 1.10% |
| <i>Vitiligo</i> | 9 | 22 | 1 | 2 | 6 | 0 | 0.17% | 0.26% | 40 | 0.43% |
| <i>Idiopathic Guttate Hypomelanosis</i> | 0 | 14 | 2 | 3 | 0 | 7 | 0.02% | 0.26% | 26 | 0.28% |
| <i>Melasma</i> | 0 | 13 | 0 | 2 | 0 | 1 | 0.00% | 0.17% | 16 | 0.17% |
| <i>Leukoderma</i> | 1 | 3 | 1 | 2 | 0 | 2 | 0.02% | 0.08% | 9 | 0.10% |
| Acneiform Disorders | | | | | | | | | 10 | 0.11% |
| <i>Rosacea</i> | 8 | 1 | 0 | 0 | 0 | 0 | 0.09% | 0.01% | 9 | 0.10% |
| <i>Acneiform Eruption</i> | 0 | 1 | 0 | 0 | 0 | 0 | 0.00% | 0.01% | 1 | 0.01% |
| Disorders of the Skin Appendages | | | | | | | | | 49 | 0.53% |
| <i>Alopecia Areata</i> | 7 | 17 | 0 | 2 | 1 | 0 | 0.09% | 0.20% | 27 | 0.29% |
| <i>Chronic Paronychia</i> | 1 | 3 | 1 | 0 | 0 | 1 | 0.02% | 0.04% | 6 | 0.06% |
| <i>Telogen Effluvium</i> | 0 | 4 | 0 | 1 | 0 | 0 | 0.00% | 0.05% | 5 | 0.05% |
| <i>Androgenetic Alopecia</i> | 0 | 3 | 1 | 0 | 0 | 0 | 0.01% | 0.03% | 4 | 0.04% |
| <i>Hyperhidrosis</i> | 2 | 2 | 0 | 0 | 0 | 0 | 0.02% | 0.02% | 4 | 0.04% |
| <i>Onychauxis</i> | 0 | 1 | 0 | 0 | 0 | 0 | 0.00% | 0.01% | 1 | 0.01% |
| <i>Brittle Nails</i> | 1 | 0 | 0 | 0 | 0 | 0 | 0.01% | 0.00% | 1 | 0.01% |
| <i>Onychodystrophy</i> | 0 | 1 | 0 | 0 | 0 | 0 | 0.00% | 0.01% | 1 | 0.01% |
| Pruritus and Dysesthesia | | | | | | | | | 161 | 1.73% |
| <i>Postherpetic Neuralgia</i> | 13 | 23 | 6 | 23 | 1 | 11 | 0.21% | 0.61% | 77 | 0.83% |
| <i>Prurigo Nodularis</i> | 14 | 12 | 12 | 9 | 1 | 1 | 0.29% | 0.24% | 49 | 0.53% |
| <i>Pruritus due to Internal Cause</i> | 6 | 15 | 3 | 3 | 2 | 0 | 0.12% | 0.19% | 29 | 0.31% |
| <i>Prurigo Mitis</i> | 0 | 3 | 0 | 0 | 0 | 0 | 0.00% | 0.03% | 3 | 0.03% |
| <i>Pruritus Scroti or Ani</i> | 2 | 1 | 0 | 0 | 0 | 0 | 0.02% | 0.01% | 3 | 0.03% |
| Drug-Related Hypersensitivity Reactions | | | | | | | | | 104 | 1.12% |
| <i>Hypersensitivity Reaction to Drug</i> | 22 | 6 | 5 | 3 | 6 | 0 | 0.35% | 0.10% | 42 | 0.45% |

Table 4. Frequency distribution of the various dermatological diseases of Filipino elderly patients seen at the ambulatory care service from January 2014 to December 2018 (Continued)

| Dermatological Diagnoses | Age Group | | | | | | Total | % | | |
|---|-----------|-----------|-----------|-----------|-----------|-----------|----------|------------|-------------|---------------|
| | 60 – 69 | | 70 – 79 | | ≥80 | | | | | |
| | Years Old | Years Old | Years Old | Years Old | Years Old | Years Old | | | | |
| | M | F | M | F | M | F | Male (%) | Female (%) | | |
| <i>Morbilliform Eruption Sec to Drug</i> | 4 | 25 | 3 | 4 | 0 | 4 | 0.08% | 0.35% | 40 | 0.43% |
| <i>Fixed Drug Eruption</i> | 1 | 9 | 0 | 3 | 0 | 0 | 0.01% | 0.13% | 13 | 0.14% |
| <i>Acute Generalized Exanthematous Pustulosis Secondary to Drug</i> | 0 | 2 | 2 | 0 | 0 | 0 | 0.02% | 0.02% | 4 | 0.04% |
| <i>Stevens-Johnson Syndrome Secondary to Drug</i> | 0 | 2 | 0 | 1 | 0 | 0 | 0.00% | 0.03% | 3 | 0.03% |
| <i>Photoallergic Dermatitis Secondary to Drug</i> | 0 | 0 | 0 | 2 | 0 | 0 | 0.00% | 0.02% | 2 | 0.02% |
| INFECTION | | | | | | | | | 2252 | 24.19% |
| Bacterial Infection | | | | | | | | | 544 | 5.84% |
| <i>Cellulitis</i> | 68 | 54 | 30 | 33 | 6 | 20 | 1.12% | 1.15% | 211 | 2.27% |
| <i>Furuncle or Furunculosis</i> | 41 | 55 | 22 | 12 | 5 | 5 | 0.73% | 0.77% | 140 | 1.50% |
| <i>Impetigo Contagiosa</i> | 11 | 17 | 4 | 10 | 2 | 1 | 0.18% | 0.30% | 45 | 0.48% |
| <i>Hansen's Disease</i> | 25 | 13 | 3 | 1 | 0 | 0 | 0.30% | 0.15% | 42 | 0.45% |
| <i>Folliculitis</i> | 12 | 7 | 7 | 5 | 1 | 1 | 0.21% | 0.14% | 33 | 0.35% |
| <i>Acute Pyogenic Paronychia</i> | 6 | 9 | 3 | 6 | 0 | 5 | 0.10% | 0.21% | 29 | 0.31% |
| <i>Ecthyma</i> | 3 | 8 | 4 | 3 | 0 | 2 | 0.08% | 0.14% | 20 | 0.21% |
| <i>Carbuncle</i> | 6 | 3 | 0 | 0 | 0 | 1 | 0.06% | 0.04% | 10 | 0.11% |
| <i>Abscess</i> | 2 | 2 | 0 | 1 | 0 | 0 | 0.02% | 0.03% | 5 | 0.05% |
| <i>Erysipelas</i> | 0 | 0 | 0 | 3 | 0 | 1 | 0.00% | 0.04% | 4 | 0.04% |
| <i>Erythrasma</i> | 1 | 2 | 0 | 0 | 0 | 0 | 0.01% | 0.02% | 3 | 0.03% |
| <i>Osteomyelitis</i> | 1 | 0 | 0 | 0 | 0 | 0 | 0.01% | 0.00% | 1 | 0.01% |
| <i>Cutaneous TB</i> | 0 | 0 | 0 | 0 | 1 | 0 | 0.01% | 0.00% | 1 | 0.01% |
| Fungal Infection | | | | | | | | | 980 | 10.53% |
| <i>Tinea Pedis</i> | 95 | 95 | 46 | 56 | 20 | 15 | 1.73% | 1.78% | 327 | 3.51% |
| <i>Tinea Corporis</i> | 44 | 88 | 31 | 33 | 7 | 6 | 0.88% | 1.36% | 209 | 2.25% |
| <i>Distolateral Onychomycosis</i> | 33 | 55 | 9 | 43 | 7 | 19 | 0.53% | 1.26% | 166 | 1.78% |
| <i>Tinea Cruris</i> | 10 | 39 | 16 | 15 | 5 | 9 | 0.33% | 0.68% | 94 | 1.01% |
| <i>Tinea Versicolor</i> | 15 | 22 | 0 | 6 | 0 | 0 | 0.16% | 0.30% | 43 | 0.46% |
| <i>Candidal Intertrigo</i> | 4 | 22 | 0 | 15 | 0 | 0 | 0.04% | 0.40% | 41 | 0.44% |
| <i>Tinea Manuum</i> | 11 | 11 | 5 | 7 | 0 | 1 | 0.17% | 0.20% | 35 | 0.38% |
| <i>Candidal Onychomycosis</i> | 4 | 11 | 1 | 2 | 0 | 1 | 0.05% | 0.15% | 19 | 0.20% |
| <i>Candidal Paronychia</i> | 1 | 11 | 0 | 3 | 0 | 0 | 0.01% | 0.15% | 15 | 0.16% |
| <i>Cutaneous Candidiasis</i> | 3 | 4 | 0 | 4 | 0 | 0 | 0.03% | 0.09% | 11 | 0.12% |
| <i>Tinea Incognito</i> | 2 | 5 | 0 | 1 | 0 | 2 | 0.02% | 0.09% | 10 | 0.11% |
| <i>Erosio Interdigitalis Blastomycetica</i> | 5 | 1 | 0 | 0 | 0 | 0 | 0.05% | 0.01% | 6 | 0.06% |
| <i>Tinea Capitis</i> | 1 | 0 | 0 | 0 | 0 | 1 | 0.01% | 0.01% | 2 | 0.02% |
| <i>Mycetoma</i> | 0 | 0 | 1 | 0 | 0 | 0 | 0.01% | 0.00% | 1 | 0.01% |

(Continued)

Table 4. Frequency distribution of the various dermatological diseases of Filipino elderly patients seen at the ambulatory care service from January 2014 to December 2018 (Continued)

| Dermatological Diagnoses | Age Group | | | | | | Total | % | | |
|--|----------------------|-----|----------------------|----|------------------|----|-------|-------|-------------|---------------|
| | 60 – 69 Years Old | | 70 – 79 Years Old | | ≥80 Years Old | | | | | |
| | M | F | M | F | M | F | | | Male (%) | Female (%) |
| <i>Tinea Faciei</i> | 0 | 1 | 0 | 0 | 0 | 0 | 0.00% | 0.01% | 1 | 0.01% |
| Viral Infection | | | | | | | | | 728 | 7.82% |
| <i>Herpes Zoster</i> | 80 | 121 | 40 | 59 | 3 | 22 | 1.32% | 2.17% | 325 | 3.49% |
| <i>Verruca Vulgaris</i> | 55 | 126 | 10 | 34 | 3 | 2 | 0.73% | 1.74% | 230 | 2.47% |
| <i>Postherpetic Neuralgia</i> | 13 | 23 | 6 | 23 | 1 | 11 | 0.21% | 0.61% | 77 | 0.83% |
| <i>Verruca Plana</i> | 15 | 41 | 6 | 7 | 1 | 4 | 0.24% | 0.56% | 74 | 0.79% |
| <i>Verruca Filiformis</i> | 6 | 30 | 1 | 8 | 4 | 3 | 0.12% | 0.44% | 52 | 0.56% |
| <i>Verruca Plantaris</i> | 1 | 13 | 2 | 4 | 0 | 0 | 0.03% | 0.18% | 20 | 0.21% |
| <i>Herpes Simplex Labialis</i> | 12 | 3 | 1 | 1 | 0 | 0 | 0.14% | 0.04% | 17 | 0.18% |
| <i>Condyloma Acuminata</i> | 7 | 0 | 0 | 0 | 0 | 0 | 0.08% | 0.00% | 7 | 0.08% |
| <i>Molluscum Contagiosum</i> | 1 | 0 | 0 | 2 | 0 | 0 | 0.01% | 0.02% | 3 | 0.03% |
| NEOPLASMS | | | | | | | | | 1125 | 12.09% |
| Malignant Neoplasm | | | | | | | | | 69 | 0.74% |
| <i>Basal Cell Carcinoma</i> | 10 | 22 | 9 | 10 | 0 | 2 | 0.20% | 0.37% | 53 | 0.57% |
| <i>Squamous Cell Carcinoma</i> | 0 | 0 | 3 | 5 | 1 | 0 | 0.04% | 0.05% | 9 | 0.10% |
| <i>Mycosis Fungoides</i> | 1 | 2 | 1 | 1 | 0 | 0 | 0.02% | 0.03% | 5 | 0.05% |
| <i>Cutaneous Metastasis</i> | 0 | 1 | 0 | 0 | 0 | 0 | 0.00% | 0.01% | 1 | 0.01% |
| <i>Cutaneous Lymphoma</i> | 0 | 1 | 0 | 0 | 0 | 0 | 0.00% | 0.01% | 1 | 0.01% |
| Pre-Malignant Neoplasm | | | | | | | | | 22 | 0.24% |
| <i>Bowen's Disease</i> | 0 | 8 | 0 | 1 | 0 | 0 | 0.00% | 0.10% | 9 | 0.10% |
| <i>Keratoacanthoma</i> | 1 | 1 | 2 | 1 | 1 | 0 | 0.04% | 0.02% | 6 | 0.06% |
| <i>Actinic Keratosis</i> | 1 | 0 | 2 | 1 | 0 | 0 | 0.03% | 0.01% | 4 | 0.04% |
| <i>Paget's Disease</i> | 0 | 2 | 0 | 1 | 0 | 0 | 0.00% | 0.03% | 3 | 0.03% |
| Benign Neoplasm | | | | | | | | | 1034 | 11.11% |
| <i>Seborrheic Keratosis</i> | 38 | 108 | 35 | 82 | 18 | 20 | 0.98% | 2.26% | 301 | 3.23% |
| <i>Milia</i> | 16 | 131 | 6 | 56 | 4 | 23 | 0.28% | 2.26% | 236 | 2.54% |
| <i>Acrochordon</i> | 52 | 82 | 10 | 25 | 2 | 5 | 0.69% | 1.20% | 176 | 1.89% |
| <i>Dermatosis Papulosa Nigra</i> | 18 | 28 | 2 | 11 | 1 | 0 | 0.23% | 0.42% | 60 | 0.64% |
| <i>Syringoma</i> | 5 | 33 | 2 | 6 | 0 | 0 | 0.08% | 0.42% | 46 | 0.49% |
| <i>Sebaceous Cyst/Epidermal Inclusion Cyst</i> | 6 | 18 | 5 | 6 | 2 | 1 | 0.14% | 0.27% | 38 | 0.41% |
| <i>Solar Lentigo</i> | 3 | 17 | 6 | 9 | 1 | 1 | 0.11% | 0.29% | 37 | 0.40% |
| <i>Sebaceous Hyperplasia</i> | 3 | 13 | 1 | 2 | 2 | 0 | 0.06% | 0.16% | 21 | 0.23% |
| <i>Cherry Angioma</i> | 7 | 8 | 0 | 0 | 0 | 0 | 0.08% | 0.09% | 15 | 0.16% |
| <i>Neurofibroma</i> | 2 | 12 | 0 | 0 | 0 | 0 | 0.02% | 0.13% | 14 | 0.15% |
| <i>Melanocytic Nevus</i> | 1 | 8 | 0 | 2 | 0 | 1 | 0.01% | 0.12% | 12 | 0.13% |
| <i>Xanthelasma</i> | 0 | 8 | 0 | 2 | 0 | 1 | 0.00% | 0.12% | 11 | 0.12% |
| <i>Pyogenic Granuloma</i> | 0 | 10 | 1 | 0 | 0 | 0 | 0.01% | 0.11% | 11 | 0.12% |
| <i>Fibrous Papule</i> | 1 | 7 | 2 | 0 | 0 | 0 | 0.03% | 0.08% | 10 | 0.11% |

Table 4. Frequency distribution of the various dermatological diseases of Filipino elderly patients seen at the ambulatory care service from January 2014 to December 2018 (Continued)

| Dermatological Diagnoses | Age Group | | | | | | Total | % | | |
|---|----------------------|----|----------------------|----|------------------|----|-------|-------|------------|--------------|
| | 60 – 69 Years Old | | 70 – 79 Years Old | | ≥80 Years Old | | | | | |
| | M | F | M | F | M | F | | | Male (%) | Female (%) |
| <i>Lipoma</i> | 4 | 2 | 0 | 1 | 2 | 0 | 0.06% | 0.03% | 9 | 0.10% |
| <i>Senile Comedone</i> | 4 | 1 | 0 | 0 | 0 | 0 | 0.04% | 0.01% | 5 | 0.05% |
| <i>Hemangioma</i> | 2 | 2 | 0 | 0 | 0 | 0 | 0.02% | 0.02% | 4 | 0.04% |
| <i>Dermatofibroma</i> | 1 | 1 | 0 | 1 | 0 | 0 | 0.01% | 0.02% | 3 | 0.03% |
| <i>Favre-Racouchot Syndrome</i> | 2 | 1 | 0 | 0 | 0 | 0 | 0.02% | 0.01% | 3 | 0.03% |
| <i>Xanthoma</i> | 0 | 3 | 0 | 0 | 0 | 0 | 0.00% | 0.03% | 3 | 0.03% |
| <i>Eccrine Poroma</i> | 2 | 1 | 0 | 0 | 0 | 0 | 0.02% | 0.01% | 3 | 0.03% |
| <i>Angiokeratoma</i> | 1 | 2 | 0 | 0 | 0 | 0 | 0.01% | 0.02% | 3 | 0.03% |
| <i>Steatocystoma</i> | 0 | 1 | 0 | 1 | 0 | 0 | 0.00% | 0.02% | 2 | 0.02% |
| <i>Acrokeratosis Verruciformis of Hopf</i> | 0 | 2 | 0 | 0 | 0 | 0 | 0.00% | 0.02% | 2 | 0.02% |
| <i>Trichofolliculoma</i> | 0 | 1 | 0 | 0 | 0 | 0 | 0.00% | 0.01% | 1 | 0.01% |
| <i>Compound Nevus</i> | 0 | 0 | 0 | 1 | 0 | 0 | 0.00% | 0.01% | 1 | 0.01% |
| <i>Digital Mucocyst</i> | 0 | 0 | 0 | 1 | 0 | 0 | 0.00% | 0.01% | 1 | 0.01% |
| <i>Ganglion Tendon Cyst</i> | 1 | 0 | 0 | 0 | 0 | 0 | 0.01% | 0.00% | 1 | 0.01% |
| <i>Blue Nevus</i> | 1 | 0 | 0 | 0 | 0 | 0 | 0.01% | 0.00% | 1 | 0.01% |
| <i>Hydrocystoma</i> | 0 | 1 | 0 | 0 | 0 | 0 | 0.00% | 0.01% | 1 | 0.01% |
| <i>Venous Lake</i> | 0 | 0 | 0 | 1 | 0 | 0 | 0.00% | 0.01% | 1 | 0.01% |
| <i>Ephelids</i> | 0 | 1 | 0 | 0 | 0 | 0 | 0.00% | 0.01% | 1 | 0.01% |
| <i>Mucocele</i> | 0 | 0 | 0 | 1 | 0 | 0 | 0.00% | 0.01% | 1 | 0.01% |
| VASCULAR | | | | | | | | | 348 | 3.74% |
| <i>Stasis Dermatitis</i> | 28 | 76 | 27 | 40 | 20 | 8 | 0.81% | 1.33% | 199 | 2.14% |
| <i>Stasis Ulcer</i> | 3 | 42 | 13 | 7 | 7 | 12 | 0.25% | 0.66% | 84 | 0.90% |
| <i>Pigmented Purpuric Dermatoses</i> | 5 | 21 | 1 | 4 | 3 | 0 | 0.10% | 0.27% | 34 | 0.37% |
| <i>Lipodermatosclerosis</i> | 2 | 5 | 2 | 0 | 0 | 4 | 0.04% | 0.10% | 13 | 0.14% |
| <i>Pressure Ulcer</i> | 0 | 3 | 2 | 1 | 0 | 1 | 0.02% | 0.05% | 7 | 0.08% |
| <i>Chronic Venous Insufficiency</i> | 0 | 1 | 1 | 0 | 1 | 0 | 0.02% | 0.01% | 3 | 0.03% |
| <i>Arterial Ulcer</i> | 2 | 0 | 1 | 0 | 0 | 0 | 0.03% | 0.00% | 3 | 0.03% |
| <i>Angiokeratoma</i> | 1 | 2 | 0 | 0 | 0 | 0 | 0.01% | 0.02% | 3 | 0.03% |
| <i>Varicose Veins</i> | 0 | 2 | 0 | 0 | 0 | 0 | 0.00% | 0.02% | 2 | 0.02% |
| TRAUMA- OR INJURY-RELATED TO PHYSICAL OR CHEMICAL FACTOR | | | | | | | | | 136 | 1.46% |
| <i>Trauma-Induced Erosion/Ulcer</i> | 11 | 15 | 8 | 6 | 0 | 0 | 0.20% | 0.23% | 40 | 0.43% |
| <i>Callus</i> | 7 | 18 | 0 | 8 | 0 | 0 | 0.08% | 0.28% | 33 | 0.35% |
| <i>Friction Blister</i> | 4 | 10 | 0 | 4 | 3 | 0 | 0.08% | 0.15% | 21 | 0.23% |
| <i>Thermal Burn</i> | 4 | 5 | 0 | 4 | 2 | 1 | 0.06% | 0.11% | 16 | 0.17% |
| <i>Corn</i> | 1 | 8 | 0 | 1 | 0 | 1 | 0.01% | 0.11% | 11 | 0.12% |
| <i>Ecchymoses</i> | 1 | 1 | 2 | 1 | 0 | 0 | 0.03% | 0.02% | 5 | 0.05% |
| <i>Frictional Dermatitis</i> | 0 | 0 | 1 | 1 | 1 | 0 | 0.02% | 0.01% | 3 | 0.03% |

(Continued)

Table 4. Frequency distribution of the various dermatological diseases of Filipino elderly patients seen at the ambulatory care service from January 2014 to December 2018 (Continued)

| Dermatological Diagnoses | Age Group | | | | | | Total | % | | |
|---|-----------|----|---------|----|-----|---|-------|-------|------------|--------------|
| | 60 – 69 | | 70 – 79 | | ≥80 | | | | | |
| | M | F | M | F | M | F | | | Male (%) | Female (%) |
| <i>Onychocryptosis</i> | 0 | 2 | 0 | 0 | 0 | 1 | 0.00% | 0.03% | 3 | 0.03% |
| <i>Melanonychia Secondary to Trauma</i> | 1 | 1 | 0 | 0 | 0 | 0 | 0.01% | 0.01% | 2 | 0.02% |
| <i>Avulsed Nail</i> | 1 | 0 | 0 | 0 | 0 | 0 | 0.01% | 0.00% | 1 | 0.01% |
| <i>Pincer Nail</i> | 0 | 1 | 0 | 0 | 0 | 0 | 0.00% | 0.01% | 1 | 0.01% |
| INFESTATIONS | | | | | | | | | 202 | 2.17% |
| <i>Arthropod Bite</i> | 28 | 52 | 10 | 31 | 1 | 4 | 0.42% | 0.93% | 126 | 1.35% |
| <i>Scabies</i> | 18 | 19 | 10 | 7 | 1 | 0 | 0.31% | 0.28% | 55 | 0.59% |
| <i>Pediculosis Capitis</i> | 2 | 12 | 0 | 3 | 1 | 1 | 0.03% | 0.17% | 19 | 0.20% |
| <i>Cutaneous Larva Migrans</i> | 1 | 1 | 0 | 0 | 0 | 0 | 0.01% | 0.01% | 2 | 0.02% |
| OTHERS | | | | | | | | | 228 | 2.45% |
| Dermal Hypertrophies | | | | | | | | | 116 | 1.25% |
| <i>Keloid</i> | 27 | 53 | 3 | 12 | 1 | 0 | 0.33% | 0.70% | 96 | 1.03% |
| <i>Hypertrophic Scar</i> | 2 | 14 | 0 | 3 | 0 | 1 | 0.02% | 0.19% | 20 | 0.21% |
| Metabolic Skin Disorders | | | | | | | | | 87 | 0.93% |
| <i>Pretibial Myxedema</i> | 0 | 1 | 0 | 0 | 0 | 0 | 0.00% | 0.01% | 1 | 0.01% |
| <i>Papular Mucinosis</i> | 0 | 1 | 0 | 0 | 0 | 0 | 0.00% | 0.01% | 1 | 0.01% |
| <i>Lichen Amyloidosis</i> | 17 | 50 | 5 | 10 | 0 | 3 | 0.24% | 0.68% | 85 | 0.91% |
| Granulomatous Diseases | | | | | | | | | 2 | 0.02% |
| <i>Granuloma Annulare</i> | 0 | 1 | 0 | 1 | 0 | 0 | 0.00% | 0.02% | 2 | 0.02% |
| Lichenoid Disease | | | | | | | | | 1 | 0.01% |
| <i>Lichen Planus</i> | 0 | 0 | 0 | 1 | 0 | 0 | 0.00% | 0.01% | 1 | 0.01% |
| Disorders of Keratinization | | | | | | | | | 2 | 0.02% |
| <i>Ichthyosis Vulgaris</i> | 1 | 0 | 0 | 0 | 0 | 0 | 0.01% | 0.00% | 1 | 0.01% |
| <i>Palmoplantar Keratoderma</i> | 0 | 0 | 0 | 0 | 1 | 0 | 0.01% | 0.00% | 1 | 0.01% |
| Unclassified | | | | | | | | | 20 | 0.21% |
| <i>Edema Blister</i> | 3 | 0 | 2 | 0 | 0 | 0 | 0.05% | 0.00% | 5 | 0.05% |
| <i>Non-Healing Ulcer</i> | 1 | 2 | 6 | 1 | 0 | 5 | 0.08% | 0.09% | 15 | 0.16% |

ageing population in the Philippines is expected to increase rapidly, faster than growth in the total population,[12] therefore, the demand for health services is also expected to increase over the years. An increased awareness of geriatric medicine is necessary in our changing times. Nowadays, there is still a lack of priority or attention from the health sector concerning geriatric medicine, particularly in addressing ageing-related comorbidities. Even though dermatologic problems seem minor compared with other systemic diseases that are frequently encountered in elderly patients, accurate diagnosis and proper management will help reduce

the morbidity; hence, this will positively influence the quality of life of these patients.

The prevalence of dermatological consultations among elderly patients in the dermatology outpatient setting vary in various reports worldwide, however, with none exceeding 25%.[8,13-17] In this review, it was 16.76%, which was similar to results of other studies. Over the years, we observed a rise and fall in the number of elderly patients seeking dermatological consultation in this institution from 2014 to 2018 with 2016 having the most number of elderly patients seeking dermatological consultation. This rate may tell us that certain skin problems may

Table 5. Top 10 most common dermatological diseases of Filipino elderly patients at the ambulatory care service from January 2014 to December 2018.

| Top 10 Most Common Dermatological Diseases | Total | Females (n = 5,760) | | Males (n = 3,549) | | Test Statistic | p-value (two-tailed) |
|--|------------------------|------------------------|---------|------------------------|---------|--------------------|----------------------|
| | Frequency (Percentage) | Frequency (Percentage) | Ranking | Frequency (Percentage) | Ranking | | |
| 1 Xerosis/Xerotic Eczema | 933 (10.02%) | 573 (6.16%) | 1 | 360 (3.87%) | 1 | 5.05 [†] | 0.0001 |
| 2 Irritant Contact Dermatitis | 652 (7.00%) | 422 (4.53%) | 2 | 230 (2.47%) | 4 | 5.44 [†] | 0.0001 |
| 3 Lichen Simplex Chronicus | 621 (6.67%) | 350 (3.76%) | 3 | 271 (2.91%) | 3 | 2.25* | 0.024 |
| 4 Psoriasis | 518 (5.56%) | 316 (3.39%) | 4 | 202 (2.17%) | 5 | 4.89 [†] | 0.0001 |
| 5 Seborrheic Dermatitis | 488 (5.24%) | 197 (2.12%) | 9 | 291 (3.13%) | 2 | -2.90 [†] | 0.004 |
| 6 Allergic Contact Dermatitis | 407 (4.37%) | 281 (3.02%) | 5 | 126 (1.35%) | 7 | 5.61 [†] | 0.0001 |
| 7 Tinea Pedis | 327 (3.51%) | 166 (1.78%) | 10 | 161 (1.73%) | 6 | 0.18 | 0.858 |
| 8 Herpes Zoster | 325 (3.49%) | 202 (2.17%) | 8 | 123 (1.32%) | 8 | 3.13 [†] | 0.002 |
| 9 Seborrheic Keratosis | 301 (3.23%) | 210 (2.26%) | 6 | 91 (0.98%) | 9 | 4.99 [†] | 0.0001 |
| 10 Milia | 236 (2.54%) | 210 (2.26%) | 6 | 85 (0.91%) | 10 | 5.34 [†] | 0.0001 |

*Significant at 0.05

†Significant at 0.01

not be bothersome for most elderly patients that would prompt them to seek consult right away. It is only after the disease has worsened despite all measures tried to control the condition that would usually prompt them to be seen by a dermatologist.

In this study, females constantly account for a majority of elderly patients seen. There is incongruence among different studies regarding the gender distribution of elderly patients with dermatological complaints. Similar to the present study, three retrospective studies from Croatia, [13] Turkey, [18] Brazil, [19] and India [20] also showed female predominance among elderly patients seen. A local study by Tianco et al.[9] also showed a greater proportion of female patients seeking consultation. Whereas, five studies done in Asian countries (Taiwan, [15] Turkey, [16] India, [20,21] Iran [22]), and one study conducted in Northern Tanzania [23] have found a greater proportion of male elderly patients at the outpatient setting seeking dermatological consultation. However, a retrospective study conducted in the Philippines in Davao City[8] in 2002 also showed a slightly greater proportion of male elderly patients accounting to 56% versus 44% of female elderly patients. Currently, the life expectancy of Filipinos is 57.4

years for males and 63.2 years for females.[11] This could explain why there was a greater proportion of female patients in our current setting. In addition, females are also generally more concerned about skin health nowadays with the help of social media. Furthermore, according to the World Health Organization, men are more likely than women to delay medical consultation, at least until a disease has progressed added to the fact that a man's life expectancy is shorter than a woman[24].

Based on various age distributions, those aged 60-69 years old constitute majority of the elderly patients seeking dermatological consultation. This is congruent with other studies in other Asian studies (Turkey, [16] India, [20,21] Iran [22]). These findings warrant that patients belonging to this age group are generally more cognizant on measures to sustain their health and delay the course of ageing.

When the diagnoses were grouped according to the nature/etiology of disease, the inflammatory conditions represented the most common dermatological consultations among elderly patients at the ambulatory care service from 2014 to 2018. Inflammatory dermatoses comprise a wide array of skin diseases. Xerosis/xerotic eczema accounts for the most common dermatological condition among

elderly patients according to gender and various age groups in this study. This is consistent with the systematic review by Hahnel, et al. in 2015 wherein xerosis was one of the most frequent skin conditions in the elderly worldwide with a prevalence of 5.4 to 85.5%. [5] Furthermore, this was supported by other various studies in Asia. [21,25-27] However, this result varies from two other local studies [8,9] wherein, lichen simplex chronicus was the most common dermatoses seen in the elderly. Elderly patients are prone to this condition due to altered barrier function. Altered biosynthesis of stratum corneum lipids, including ceramides, triglycerides and fatty acids may lead to increased transepidermal water loss. Decreased epidermal filaggrin formation reduces natural moisturizing factor of the stratum corneum and ability to maintain hydration, thus making the skin more susceptible to contact irritants and allergens. [2] In our setting, the high prevalence of xerosis can also be due to less use of emollients and usage of harsh soaps that are readily available in the drugstore or supermarket and high humidity of the Philippine environment.

Contact dermatitis is a significant health problem affecting the elderly and this includes allergy- and irritant-type reactions. [2] A systematic review by Hahnel, et al. in 2015 has shown that contact dermatitis accounts for 2.5% to 19.8% in the elderly patients. [5] Other studies have shown different rates ranging from 1.5% to 58.7%. [14-16,18,25]. Irritant contact dermatitis predominates, accounting for approximately 80% of all contact dermatitis cases. [28] Although individual susceptibility to irritants varies greatly, contact dermatitis in the elderly population has also been shown to have underlying immune mechanisms including upregulation and recruitment of chemokine genes, regulated by T-cell effector cytokines. [28] Increased susceptibility to contact dermatitis is also due to reduced ability of the elderly skin to mount a delayed hypersensitivity reaction because of a reduction in the number of Langerhans cells, a decrease in T-cells, and diminished vascular reactivity. [2] Ageing skin is slower to turn over, preventing the natural sloughing of bound antigens, thus resulting in greater rates of sensitization. [28] In our setting, this is more common among women due to contact with soaps, detergents, and environmental pollutants during household activities like doing laundry and washing utensils.

Psoriasis is also reported in majority of patients and highly prevalent among those aged 60-69 years

old. This is similar with a US-based population study where the highest rate of occurrence of psoriasis was in the 60- to 69-year-old age group (113/100,000 population). [29] Several other studies reported prevalence of psoriasis in the aged ranging from 1% in Mexico to 18.6% in Turkey. [18,30] According to various studies, psoriasis may be highly prevalent in geriatric populations in association with other systemic conditions that are common in this age group such as metabolic syndrome, cancer (hematopoietic and pancreatic), bullous pemphigoid, inflammatory bowel diseases, and intake of multiple medications that may precipitate or aggravate psoriasis. [29] Given the chronicity of this condition, patients afflicted with psoriasis tend to pay frequent visits for disease control since therapeutic options and response vary for each patient.

Lichen simplex chronicus is one of the most common dermatologic problems prompting a consult in the Philippines setting, based on other local studies. [8,9] The prevalence of lichen simplex chronicus varies in other studies. [15,17-19] This skin disorder is characterized by itching, which has a marked psychological component. The pathogenesis is not well distinguished but defects of skin barrier are described as a trigger that enhances the pathological symptoms of lichen simplex chronicus. [31] Seborrheic dermatitis is also commonly seen in the elderly, especially those with neurological disorders, such as Parkinson's disease, Alzheimer's disease, or emotional stress. [2] The prevalence of seborrheic dermatitis is as high as 31% in the elderly. This condition is more prevalent among male elderly patients, [32] which is consistent with this study.

Infectious skin diseases represent the second most common dermatoses, with tinea pedis and herpes zoster included among the top 10 most common dermatoses in this study. These two infectious diseases are also the most prevalent infectious dermatoses in elderly patients in various studies. [16,18,23,33] Fungal infection being the most common infectious disease in this study, correlates with several other studies done in Asia. [17,18,26,34,35] According to the systematic review by Hahnel, et al. in 2015, prevalence of fungal infection varies from 10.4% to 64%, while tinea pedis ranges from 4.9% to 33%. [5] Decrease in personal care, factors including impaired immune function and epidermal turnover are observed among elderly patients, which are possibly responsible for the high prevalence of

fungal infection.[16] High humidity may favor the growth of fungal infections thus leading to increased prevalence of such diseases in our setting.

Viral infections, particularly herpes zoster, occurs frequently in old age secondary to reduced cell-mediated immunity to varicella zoster virus with advancing age may reactivate such.[22] According to the systematic review by Hahnel, et al. in 2015, the prevalence of viral infection varies from 2.8% to 12.3%[5] whereas herpes zoster is the most common based on various studies with prevalence ranging from 1.4% to 78.4%.[15-18,20,22,23] Old age and immunocompromised states are risk factors for reactivation of varicella zoster virus. Reactivation is due to decreased VZV-specific cell-mediated immunity.[36] The associated prodromal pain along with the characteristic skin manifestation is a significant contributing factor in a patient's decision to seek consultation.

Among the neoplasm group, an increase in the prevalence of benign tumors in this study was consistent with the results of systematic review by Hahnel, et al. wherein the prevalence rate ranges from 1.7% to 74.5%.[5] The most common benign neoplasms in this study were seborrheic keratosis and milia. This was congruent with the local study by Tianco, et al. in 1991.[9] Seborrheic keratoses are benign cutaneous tumors which are more frequent in those older than 40 years. An Asian study by Kwon, et al. in 2003 has shown that both ageing and cumulative sunlight exposure were found to be independent contributory factors in the development of seborrheic keratosis.[37] Particularly, the overall mean number of seborrheic keratosis per person increases significantly with each decade of life where those 60 years old have 3.47-fold risk. [38] Statistically significant higher frequency of seborrheic keratosis in the elderly can be explained by carcinogenesis caused with a cumulative effect of sun exposure and decreasing immune status of the ageing population.[13]

Malignant neoplasm was found have a prevalence rate ranging from 0.6% to 13.2% according a systematic review.[5] The result in this study was within this range which was at 0.74%. Incidence of basal cell carcinoma continued to rise, increasing up to 10% over the last decades.[39] Basal cell carcinoma, similar with other studies was the most common malignant neoplasm presenting in elderly patients.[15,19,23] A higher prevalence with a 10-

to 20-fold increased risk for cutaneous premalignant and malignant lesions was found in the Western countries than in the local setting. Likewise, basal cell carcinoma was less prevalent in developing countries like the Philippines.[3] The racial and cultural differences may explain a lower prevalence of skin malignancies in our study. Skin with more innate pigmentation provides a more efficient protection against sunlight than fair skin. Asians have skin pigmentation that, on average, is more protective of the carcinogenic effect of ultraviolet light than the Caucasians.[39] In addition, in spite of living in a tropical region with longer duration of sun exposure, Filipinos do not have the habit of sun bathing during leisure times and avoid sun exposure.[15]

Results of this epidemiological study also showed less number of conditions due to vascular, infestation, and trauma/injuries. Diseases that are vascular in origin may have been managed by the internist and/or referred to other specialties such as surgery. Stasis dermatitis comprised majority of the vascular conditions which was due to vascular abnormality associated with various diseases of the elderly like atherosclerosis and diabetes mellitus along with other risk factors like smoking and family history. On the other hand, infestation was one of the least concerns prompting a consult among elderly individuals in our setting and arthropod bite comprised majority of the cases although, studies are lacking on the prevalence of insect bite in elderly patients. It was found out that arthropod bite has no age or gender preponderance. Risk factors include residence in areas of heavy insect infestation, occupation, warm weather and the lack of protective measures. Likewise, trauma/injuries are also at the least of the dermatologic concerns among these patients and skin tears comprise majority of these cases. The risk factors for skin tears were old age, followed by impaired mobility, falls and accidental injuries, previous skin tears, cognitive impairment, and dependence in transfers. Such conditions may have been addressed by primary caregivers or have been triaged to other specialties such as surgery.

Gender wise, xerosis/xerotic eczema, irritant contact dermatitis and lichen simplex chronicus were found to be higher among females in our setting, The higher prevalence of these dermatoses in women was further supported by a study by Rahrovan, et al. in 2018 that have demonstrated that men showed

significantly lower transepidermal water loss than women and that skin pH was higher in women. On the other hand, seborrheic dermatitis was higher among elderly male since men have been reported to have a higher sebum production, whereas in women, sebum content progressively decreased over the lifetime.[38]

The present study showed that elderly patients being one of the most vulnerable sections of our society have increased risk of getting various skin diseases as lifetime exposure to environmental insults are also contributory. Due to the preventable or correctable nature of most skin disorders, appropriate skin care and treatment for elderly people should be pointed out in general health care. Population-based studies are essential in order to understand the incidence of skin diseases. Likewise, the dermatologists' role in the prevention and management of skin diseases in the ageing population cannot be over-emphasized. Therefore, the knowledge gained from this study helps to calculate the medical impact of geriatric skin diseases that will aid in developing strategies on how to address the ageing society which involves a great range of preventive measures from all medical services.

CONCLUSION

Dermatological disorders are ubiquitous in older people with a significant impact on the quality of life. This retrospective study done in our institution provides insight on the most common dermatological conditions among elderly patients. A majority of the patients are females belonging to the age group 60-69 years old. The 10 most frequent diseases encountered are xerosis or xerotic eczema, irritant contact dermatitis, lichen simplex chronicus, psoriasis, seborrheic dermatitis, allergic contact dermatitis, tinea pedis, herpes zoster, seborrheic keratosis, and milia. Inflammatory diseases comprise

most of the cutaneous conditions seen followed by infectious, then neoplastic diseases. Knowing the pattern of skin diseases is essential in making decisions concerning allocation of resources for clinical care and research in the local setting.

LIMITATION OF THE STUDY

This is a retrospective study where the information is limited to the dermatology daily outpatient master list of patients. Only data from the patients referred to and/or seen by the attending dermatology resident and/or consultant-dermatologist were included. Those patients with cutaneous complaints but were not seen, diagnosed, and managed by the dermatology service were excluded. It may be possible that the actual number of patients who presented with dermatological conditions may be higher than that which is reported.

RECOMMENDATION

It would be ideal to do a similar large-scale study that would include the other Philippine Dermatological Society institutions for a better representation of the demographics of elderly patients in our country. In addition, a study to include inpatients will also be ideal. Furthermore, a prospective study may be done which would be able to document the needed data more accurately and comprehensively. A study to focus on specific skin diseases in relation to comorbidities, risk factors, and quality of life of elderly patients may also be recommended for future studies.

Disclosure and Conflict of Interest

This study is investigator-initiated and not industry funded or company sponsored. There is no potential conflict of interest.

REFERENCES

- Yaar M, Gilchrist BA. Aging of skin. In: Wolff K, Goldsmith LA, Katz SI, Gilchrist BA, Paller AS, Leffell DJ, editors. *Fitzpatrick's Dermatology in General Medicine*. 7th ed. New York: McGraw-Hill, 2008. p.963-73.
- Wey SJ, Chen DY. Common cutaneous disorders in the elderly. *Journal of Clinical Gerontology & Geriatrics* 2010;1.2:36-41.
- Blume-Peytavi U, Kottner J, Sterry W, Hodin M, Griffiths T, Watson R, et al. Age-associated skin conditions and diseases: Current perspectives and future options. *The Gerontologist* 2016;56(2):S230-S242.
- Help Age Global Network (2017b). Ageing population in the Philippines. Available from: <http://ageingasia.org/ageing-population-philippines>
- Hahnel E, Lichterfeld A, Blume-Peytavi U, Kottner J. The epidemiology of skin conditions in the aged: A systematic review. *J Tissue Viability* [Internet]. 2017;26(1):20-8. Available from: <http://dx.doi.org/10.1016/j.jtv.2016.04.001>
- Gilchrist BA, Chiu N. Common skin disorders. Available from: http://www.merck.com/pubs/mm_geriatrics/sec15/ch123.htm.
- Beauregard S, Gilchrist BA. A survey of skin problems and skin care regimens in the elderly. *Arch Dermatol* 1987;123:1638-43.
- Ramirez ML, Serrano MR. Dermatoses in the elderly: A 4-year retrospective study in a tertiary hospital skin clinic at Davao city. *Journal of the Philippine Society of Cutaneous Medicine*. 2002;3(1):33-4.
- Tianco, E, Buendia-Teodisio G, Alberto N. Survey of skin lesions in the Filipino elderly. *International Journal of Dermatology*. 1992;31(3):196-8.
- Global Coalition on Aging. Life course of healthy skin global partnership: Consensus statement of the delegates of the 2014 Manchester Summit. Available from: http://www.globalcoalitiononaging.com/v2/data/uploads/documents/manchester-summit-consensus-statement_final.pdf
- Help Age Global Network. (2017a). Ageing and health: Philippines. Available from: <http://ageingasia.org/ageing-population-philippines>
- Perez A. Building an active, disability-free society for all. Human Rights Forum, 1999;9(1):Jul-Dec 1999.
- Cvitanović H, Knežević E, Kuljanac I, Jancić E. Skin disease in a geriatric patients group in outpatient dermatologic clinic Karlovac, Croatia. *Coll Antropol*. 2010;34 Suppl 2:247-51.
- Smith DR Leggat PA. Prevalence of skin disease among the elderly in different clinical environments. *Australasian Journal on Ageing* 2005;24(2):71-6.
- Liao YH, Chen KH, Tseng MP, Sun CC. Pattern of skin diseases in a geriatric patient group in Taiwan: A 7-year survey from the outpatient Clinic of a university medical center. *Dermatology* [Internet]. 2001;203(4):308-13. Available from: <http://dx.doi.org/10.1159/000051778>
- Yalçın B, Tamer E, Toy GG, Oztaş P, Hayran M, Alli N. The prevalence of skin diseases in the elderly: analysis of 4099 geriatric patients. *Int J Dermatol* [Internet]. 2006;45(6):672-6. Available from: <http://dx.doi.org/10.1111/j.1365-4632.2005.02607.x>
- Thapa DP, Jha AK, Kharel C, Shrestha S. Dermatological problems in geriatric patients: a hospital based study. *Nepal Med Coll J*. 2012;14(3):193-5.
- Bilgili ME, Yildiz H, and Sarici, G. Prevalence of skin diseases in a dermatology outpatient clinic in Turkey. A cross-sectional, retrospective study. *Journal of Dermatological Case Reports* 2013;7(4):108.
- Bertanha F, Nelumba EJP, Freiberg AK, Samorano LP, Festa C Neto. Profile of patients admitted to a triage dermatology clinic at a tertiary hospital in São Paulo, Brazil. *An Bras Dermatol* [Internet]. 2016;91(3):318-25. Available from: <http://dx.doi.org/10.1590/abd1806-4841.20164495>
- Goyal A, Balai M, Mittal A, Khare AK, Gupta LK. Pattern of geriatric dermatoses at a Tertiary Care Teaching Hospital of South Rajasthan, India. *Our Derm Online* [Internet]. 2017;8(3):237-41. Available from: <http://dx.doi.org/10.7241/ourd.20173.71>
- Sheethal MP, Shashikumar BM. A cross-sectional study on the dermatological conditions among the elderly population in Mandya city. *Int J Med Sci Public Health* 2015;4:467-70.
- Darjani A, Mohtasham-Amiri Z, Mohammad Amini K, Golchaji J, Sadre-Eshkevari S, Alizade N. Skin disorders among elder patients in a referral center in northern Iran (2011). *Dermatol Res Pract* [Internet]. 2013;2013:193205. Available from: <http://dx.doi.org/10.1155/2013/193205>
- Mponda K, Masenga J. Skin diseases among elderly patients attending skin clinic at the Regional Dermatology Training Centre, Northern Tanzania: a cross-sectional study. *BMC Research Notes* 2016;9(1):119.
- World Health Organization. Ageing and life course. 2019. Available from: <https://www.who.int/ageing/genger/en/>
- Durai PC, Thappa DM, Kumari R, Malathi M. Aging in elderly: Chronological versus photoaging. *Indian J Dermatol*. 2012;57(5):343.
- Patange VS, Fernandez RJ. A study of geriatric dermatoses. *Indian J Dermatol Venereol Leprol*. 1995;61(4):206-8.
- Sahoo A, Singh PC, Pattnaik S. Geriatric Dermatoses in Southern Orissa. *Indian J Dermatol*. 2000;45:66-8.
- Prakash AV, Davis MDP. Contact dermatitis in older adults: A review of the literature. *Am J Clin Dermatol* 2010;11(6):373-81.
- Grozdev IS, Van Voorhees AS, Gottlieb AB, Hsu S, Lebwohl MG, Bebo BF, et al. Psoriasis in the elderly: From the Medical Board of the National Psoriasis Foundation. *Journal of the American Academy of Dermatology* 2011;65(3):537-45.
- Vargas-Alvarado A, Salinas-Martinez R, Ocampo-Candiani J. Epidemiology of dermatosis in geriatric patients. *Rev Med Inst Mex Seguro Soc* 2009;47(3):285-9.
- Georgieva F. Current Epidemiology of lichen simplex chronicus. *J of IMAB*. 2016;22(3):1221-5.
- Farage MA, Miller KW, Berardesca E, Maibach HI. Clinical implications of aging skin. *American Journal of Clinical Dermatology* 2009;10(2):73-86.
- Polat M, İlhan M. Dermatological complaints of the elderly attending a dermatology outpatient clinic in Turkey: A prospective study over a one-year period. *Acta Dermatovenerol Croat*. 2015;23(4):270-81.
- Grover S, Narasimhalu C. A clinical study of skin changes in geriatric population. *Indian J Dermatol Venereol Leprol*. 2009;75:305-6.
- Raveendra L. A clinical study of geriatric dermatoses. *Our Dermatol Online*. 2014;5:235-9.
- John AR, Canaday DH. Herpes Zoster in the Older Adult. *Infectious Disease Clinics of North America* 2017;31(4):811-26.

37. Kwon OS, Hwang EJ, Bae JH, Park HE, Lee JC, Youn JI, et al. Seborrheic keratosis in the Korean males: causative role of sunlight. *Photodermatology, Photoimmunology and Photomedicine* 2003;19(2):73–80.
38. Rahrovan S, Fanian F, Mehryan P, Humbert P, Firooz A. Male versus female skin: What dermatologists and cosmeticians should know. *Int J Womens Dermatol* [Internet]. 2018;4(3):122–30. Available from: <http://dx.doi.org/10.1016/j.ijwd.2018.03.002>
39. Moore MG, Bennett RG. Basal cell carcinoma in asians: a retrospective analysis of ten patients. *J Skin Cancer* [Internet]. 2012;2012:741397. Available from: <http://dx.doi.org/10.1155/2012/741397>



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