

PROFILE OF SKIN DISEASES IN ELDERLY AT DERMATOLOGY AND VENEROLOGY DR SOETOMO GENERAL ACADEMIC HOSPITAL OUTPATIENT CLINIC

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Abstract

Introduction: Skin diseases in elderly are often not recorded and are not complained of by elderly patients, but the more we let it become a problem in decreasing the quality of life of elderly patients, it can be seen in the current global situation that the biggest problem in elderly is degenerative diseases, with increasing age the function Physiological human and health changes will decrease due to degenerative processes (aging) which will have an impact on changes in humans, not only physical changes, but also cognitive, emotional, social and sexual changes and it is predicted that by 2050 around (75%) elderly who suffer from this degenerative disease will not suffer from this disease can work and have to stay at home. Objective To know the profile of skin disease in the elderly population who visited the Dermatology and Venereology Outpatient clinic Dr. Soetomo General Academic Surabaya period of 2019-2020. Methods This study is a retrospective descriptive study based on medical records at the Dermatology and Venereology Outpatient clinic Dr. Soetomo General Academic Surabaya, data collection was carried out in July 2021 - November 2021. In this study an evaluation of the profile of elderly patients with outpatient status was carried out by noting gender, age, domicile, chief complaint, comorbidities, fluorescence, diagnosis, examination of vital signs, therapy, and response to therapy. Results Based on the incidence in elderly patients at the Dermatology and Venereology Outpatient clinic Dr. Soetomo General Academic Surabaya for the 2019-2020 period. 299 patients were found the most were men (51.51%), the age group 66-74 years (58.86%), the most domiciled in Surabaya (82.27%), the most common chief complaint was itching (60.87%) , the most frequent diagnosis was xerosis cutis (29.10%) and the most common lesion was erythematous macules (46.25%). Conclusion : The most common disease on the elderly's skin is in the form of xerosis cutis which requires special management to prevent a decreases in the quality of life of individuals.

Keywords: Profile, geriatric skin diseases, elderly, human and health

1. Introduction

Skin diseases in elderly are often not recorded and are not complained of by elderly patients, but the more we let it become a problem in decreasing the quality of life of elderly patients, It can be seen in the current global situation that the biggest problem in elderly is degenerative diseases. It is predicted that in 2050 later about (75%) geriatrics who suffer from this degenerative disease cannot move and have to stay at home (Ministry of Health of the Republic of Indonesia, 2013). Indonesia it self is one of the countries that will enter the population of the old structure, because the percentage of the elderly population has reached 7.6% of the total population (Population Census, BPS 2010), and will continue to increase in 2020-2035 along with Life Expectancy. Life expectancy in Indonesia which is predicted to continue to soar from 69.8 years (2010) to 72.4 in 2035 (Bappenas, 2018).

The aging process is a natural process with a decrease in physical, psychological and social conditions that interact with each other due to increasing age. The decrease in this condition for someone who has entered the elderly period will be seen from changes that appear in the appearance of the face, hands and skin (Ministry of Health of the Republic of Indonesia 2013) as well as in physiological functions will experience a decrease due to the aging process, so that non- communicable diseases appear in elderly. This degenerative process can reduce the body's resistance so that it will be susceptible to infectious diseases. The results of Basic Health Research in 2018 that most elderly patients suffer from hypertension are 63.5%, dental problems 53.6%, joint disease 18%, oral problems 17%, diabetes mellitus 5.7%, heart disease 4.5%, stroke 4.4%, kidney failure 0.8% and cancer 0.4% (Ministry of Health of the Republic of Indonesia, 2018). In addition, the skin in elderly is also susceptible to infection due to a weakened immune system. It must be identified one of them by looking at the profile of elderly patients.

In Indonesia, skin diseases still dominate and become a public health problem in Indonesia. The causes also vary from infection, allergic reactions and others. This can be attributed to the 2011 of the 10 most outpatient diseases and this disease, the proportion of cases according to gender shows that skin and subcutaneous tissue diseases are the third rank of the 10 most diseases in outpatients in hospitals throughout Indonesia. Therefore, health service planning must be designed based on elderly conditions and the pattern of services needed, referring to the choice of health service facilities accessed by elderly in seeking treatment. It can be seen from the data on elderly with places of treatment, it shows that the majority of these elderly seek outpatient treatment at health facilities (52.43%). When viewed from the type of health facilities, the proportion of elderly who seek treatment at a doctor's practice is 41.78%, to primary Health Care is 27.84%, to government hospitals is 11.46% and private hospitals is 8.8% (Susenas KOR, 2017) so that it can be handled immediately with appropriate and competent handling. Therefore, it is necessary to evaluate the profile of skin diseases in the elderly population, and there is still little data about skin diseases in the elderly in Indonesia (Healthminister/NO.209/III/2008).

2. Methods

This research is a retrospective descriptive observational study using secondary data from medical records to determine the profile and identify skin diseases in the elderly population who visited the Dermatology and Venereology Outpatient clinic Dr. Soetomo General Academic Surabaya in the period 2019-2020. The population in this study were all medical records of elderly patients over 60 years who visited Dermatology and Venereology Outpatient clinic Dr. Soetomo General Academic Surabaya. The sampling technique in this study was with a total sampling for 2 years (2019-2020). The research instruments used were Medical record data of elderly patients who visited Dermatology and Venereology Outpatient clinic Dr. Soetomo General Academic Surabaya 2019-2020 with data obtained and processed according to variable components including gender, age, domicile, chief complaint, comorbidity, fluorescence, diagnosis,

examination of vital signs, therapy and response to therapy. All data will be processed computerized. The data on the basic characteristics of the collected subjects will be analyzed and presented in descriptive form including gender, age, domicile, chief complaint, comorbidities, fluorescence, diagnosis, examination of vital signs, therapy and response to therapy. This research has received ethical approval from the Ethics Committee of Dermatology and Venereology Outpatient clinic Dr. Soetomo General Academic Surabaya No. 0853/112/4/VIII/2021.

3. Results

A retrospective study of the profile of skin diseases in the elderly population who visited the Dermatology and Venereology Outpatient clinic Dr. Soetomo General Academic Surabaya 2019-2020 has been carried out by evaluating patient medical records. The prevalence of elderly patients in the Dermatology and Venereology Outpatient clinic Dr. Soetomo General Academic Surabaya during 2019-2020 as many as 299 patients diagrams.

Table 1. Demographic data

	Characteristics	Total
Sex	Men	154 (51.51%)
	Women	145 (48.49%)
Age (years)	Middle Ages (45-54 years)	0 (0.00%)
	Elderly (55-65 years)	31 (10.37%)
	Old age young (66-74 years)	170 (56.86%)
	Old age (75-90 years)	96 (32.11%)
	Very old elderly (>90 years)	2 (0.67%)
Chief complaint	Itchy	182 (60.87%)
	Painful	21 (7.02%)
	Red stain	20 (6.69%)
	Dry skin	18 (6.02%)
	Wound	12 (4.01%)
	Plunge	11 (3.68%)
Comorbid Factor	Hipertension	54 (37.24%)
	Diabetes mellitus	47 (32.41%)
	Kidney failure	2 (1.38%)
	Others	42 (28.97%)

Table 2 Diagnosis in Elderly Patients

Category		Total
Allergic skin disease	Seborrheic dermatitis	39 (13.36%)
	Lichen simplex	34 (11.64%)
	Dermatitis with infection secondary	29 (9.93%)
	Non spesific dermatitits	11 (3.77%)
	Nummular dermatitis	8 (2,74%)
	Insect bite dermatitis	1 (0.34%)
	Dyshidrosis	1 (0.34%)
Bacterial infection	Pyoderma	3 (1.03%)
	Cutaneous absces	3 (1.03%)
	Morbus hansen	2 (0.68%)
	Celullitis	1 (0.34%)
	Folikulitis	1 (0.34%)
Viral infection	Postherpetic Neuralgia	14 (4.79%)
	Herpes Zoster	12 (4.11%)
Parasitic infection	Scabies	5 (1.71%)
	Filariasis	1 (0.34%)
Autoimmun skin disease	Psoriasis vulgaris	17 (5.82%)
	Bullous pemphigoid	13 (4.45%)
	Trombocytopenia Purpura	1 (0.34%)
	Guttate Psoriasis	3 (1.03%)
	Leukoderma	1 (0.34%)
Skin Tumor	Malignant Neoplasma	2 (0.68%)
	Pyogenic granuloma	1 (0.34%)
Others	Xerosis cutis	87 (29,79%)
	Prurigo	1 (0.68%)

Table 3. Therapy in Elderly Patients

Topical therapy		Total
Corticosteroid	Desoksimeetasone cream	78 (25.32%)
	Mometasone cream	68 (22.08%)
Moisturizer	Lotion moisturizer	99 (32.14%)
	Urea cream	19 (6.17%)
	Vaselin album	3 (0.97%)
	Bio cream	2 (0.65%)
Antibiotic	Na fucidat	39 (12.66%)
Systemic Therapy		Total
Antihistamin	Cetirizine	128 (65.31%)
	Loratadine	52 (26.53%)
	Ranitidine	3 (1.53%)
Antibiotic	Amoxicillin	4 (2.04%)
Others	Amytriptilin	9 (4.59%)

Table 4. Follow-up Elderly Patients Therapeutic Response in Elderly Patients

		Total
Control	Control	295 (98.66%)
	No control	3 (1.34%)
Therapy Response	Constant	198 (66.22%)
	Better	70 (23.41%)
	Not getting better	27 (9.03%)
	No data	4 (1.34%)

4. Discussion

The research used is a descriptive study by collecting secondary medical record data for elderly patients at Dermatology and Venereology Outpatient clinic Dr. Soetomo General Academic Surabaya. This descriptive study took 299 patients as samples, from elderly Dermatology and Venereology Outpatient clinic Dr. Soetomo General Academic Surabaya. Based on the data that has been obtained from 2019 to 2020, it can be seen that the highest number of elderly patients was in 2019, which was 183 patients or (61.20%). This ranking is followed by the number of data patients in 2020 as many as 116 patients or (38.80%). If observed, the number of elderly patients in 2019 to 2020 has decreased, but in 2017-2018 it has increased. The increase in geriatric patients in the Dermatology and Venereology Outpatient clinic Dr. Soetomo General Academic Surabaya in the year before the possibility of a COVID-19 pandemic, so the indications for patients to seek treatment at Dermatology and Venereology Outpatient clinic Dr. Soetomo General Academic Surabaya. The decrease in elderly patients in the Dermatology and Venereology Outpatient clinic Dr. Soetomo General Academic Surabaya from 2019 to 2020 may be caused by the COVID-19 pandemic where people tend to be afraid to go to the hospital and prioritize patients with severe complaints who need treatment in the form of surgery and others.

The study of the sex group of geriatric patients at the Dermatology and Venereology Outpatient clinic Dr. Soetomo General Academic Surabaya for the 2019-2020 period, most of them were men with 154 patients or with a percentage (51.51%), while women were 145 or (48.49%). The results of this study are in accordance with previous which stated that the prevalence of geriatric patients at the Dermatology and Venereology Polyclinic at the West Nusa Tenggara Provincial Hospital for the period 2012 to 2014 was 418, with (59.3%) male and (40.7%) female. (Hidajat et al., 2014). Geriatric patients in Turkey from 2007 to 2010 were 5961 patients, (58.1%) were male and (41.9%) were female. Based on the literature, men's facial skin does not get protection from pollution or sunlight so that it damages collagen fibers, exposure to smoke and harmful chemicals from smoking will aggravate wrinkles on the skin, testosterone levels decrease with age causing reduced skin flexibility and loss of fat on the skin. Bilgili, 2012).

Based on the distribution of the age group of patients, most of the patients were elderly patients in Dermatology and Venereology Outpatient clinic Dr. Soetomo General Academic Surabaya for the 2019-2020 period, in general the most age group is the young elderly (66-74 years), as many as 170 patients (56.86%), the elderly age group (55-65 years) 31 patients (10.37%), the elderly group 96 patients (32.11%) and the oldest age group (> 90 years) in the 2019-2020 period as many as 2 patients (0.67%). These results seem similar to previous and colleagues in 2017 with the age group 60-75 years. Based on satisfaction, it was stated that skin disease in elderly was in the elderly or (>60 years), so that it contributed to the increased vulnerability of the elderly to infection (Yunita et al., 2014). Entering old age means experiencing setbacks, for example physical decline which is marked by sagging skin, white hair, tooth loss, poor hearing, deteriorating vision, slow movement, and disproportionate body figures (Ministry of Health of the Republic of Indonesia, 2016).

Based on demographic data, it is known that skin disease in the elderly population in Dermatology and Venereology Outpatient clinic Dr. Soetomo General Academic Surabaya for the 2019-2020 period was the most in the Surabaya area as many as 246 patients or presented (82.27%) and spread in almost all areas in Surabaya, even elderly patients with skin diseases also occurred in areas outside Surabaya. One of the causes is the normal flora found in the human body, so that all people, especially elderly patients, can suffer from skin diseases and depend on precipitating factors (Aspiani, 2014) such as the influence of weather changes, hot or humid air, air dryness, air pollution so that elderly patients can interfere with external infections, be it bacteria, viruses or fungi (Anggowarsito, 2014). In addition, melanocytes also play an important role in protecting the skin against sun exposure.

It was found that the complaints commonly felt in geriatric patients were itching as many as 126 patients (68.85%) in 2019 and as many as 56 patients (48.28%), but not only that, other complaints were also found, namely red patches, dry skin, pain, feels hot, flexing, lumps, sores on the skin, swelling, white patches, pus, blisters, dandruff, black spots, ulcers, food allergies, blue spots, weak legs, numbness and others. This is in accordance with research which states that the main complaint in elderly patients is itching, which is felt itchy due to repeated scratching and gets worse due to infection (Dedianto et al., 2017).

Based on the distribution of diagnosis of elderly patients in Dermatology and Venereology Outpatient clinic Dr. Soetomo General Academic Surabaya for the 2019-2020 period, the three most cases were xerosis cutis 87 patients or (29.79%) followed by immunological dermatology (seborrheic dermatitis) 39 patients (13.36%), (lichen simplex) 34 patients (11.64%). In the immunological dermatology group, dermatitis with infection was 29 patients (9.93% of the complaints of

immunologic dermatology), non-specific dermatitis 11 patients (3.77%), nummular dermatitis 8 patients (2.74%), insect bite dermatitis and dyshidrosis. 1 patient (0.34%). Meanwhile, in the bacterial infection group, the diagnosis of pyoderma, cutaneous abscess and Hansen's morbus were the three most common diseases (1.03%; 0.68%; 0.34%). In the viral infection group, 5 patients (1.71%) scabies and 1 patient (0.34%) filariasis were affected by viral infection due to tropical climate factors and patient hygiene. While in the autoimmune group 3 the most were psoriasis vulgaris with 17 patients (5.82%), bullous pemphigoid in 13 patients (4.45%), guttate psoriasis in 3 patients (1.03%) and leukoderma in 1 patient (0.34%). . Skin cancer in 2 patients (0.68%) and skin tumor in 1 patient (0.34%). And the others were prurigo in 2 patients (0.68%). A study in Taiwan by Liao YH (2001) on elderly patients who visited the Dermatology Polyclinic of the National Taiwan University Hospital in 1993-1999 showed that the most common skin disorders were dermatitis (58.7%), fungal infections (38.0%), pruritus (14.2%), benign tumor (12.8%), and viral infection (12.3%). A study conducted in Tunisia by Souissi A et al (2006) on 1518 elderly patients in a skin clinic for one year (June 1999 to July 2000) showed that fungal infections were the most common skin disease (16.9%), followed by tumors (12.8% of which 63.3% were benign), dermatitis (11.9%), keratinization anomalies (8.7%), bacterial infections (8.7%), viral infections (6, 8%), and pruritus (6.4%). A study in Croatia by Cvitanović H et al (2010) in 3200 elderly patients found that the most diagnoses were actinic keratosis (22.38%), seborrheic dermatitis (18.98%), nummular dermatitis (9.37%), allergic contact dermatitis and irritants (7.3%), mycosis (6.81%), psoriasis (6.20%), verruca vulgaris (4.74%), fibroma (3.28%).

Xerosis cutis is a medical term for dry skin characterized clinically by rough, scaly and itchy skin caused by a lack of moisture in the stratum corneum due to a decrease in water content. Damage to the stratum corneum causes the water content to be below 10%. Based on the literature, it is stated that xerosis has impaired barrier function in the stratum corneum, changes in skin pH become more alkaline, stratum corneum protease disorders, aging decreases the activity of the sebaceous glands and sweat glands, and decreases estrogen levels in women. Several mechanisms linking xerosis with pruritus are clear, for example, changes in pH cause an increase in serine protease activity in the skin which then activates protease-activated 2 (PAR2) receptors which induce itching (Yusharyahya et al., 2017). In a study in France by Paul C et al., (2011) xerosis was found in 55.6% of patients aged 65 years, and approximately 9% of the elderly population had moderate to severe xerosis.

Dermatitis is a skin disorder with subjective symptoms in the form of itching and is objectively marked by patches, rashes or inflammation. Symptoms can include redness due to dilation of blood vessels, swelling or bruising due to accumulation of fluid in the tissues, thickening of the skin and signs of scratching and changes in skin color. Factors that cause dermatitis are divided into two, namely exogenous factors (chemicals such as water, temperature), (microorganisms such as bacteria, fungi), and endogenous factors (atopic dermatitis). The severity of skin disorders due to dermatitis depends on the patient's immune power. In elderly patients, the ability of the immune system decreases. However, the decline in the ability of the system, which consists of the lymphatic system and especially white blood cells, is also a contributing factor in the aging process. If the patient suffers from dermatitis at a level that has worsened, blisters occur on the skin and are very dangerous. Based on data obtained from the Health Services Division of the Batua Health Center, there are 62.48% of the elderly who experience dermatitis, where the number of elderly >50 years who experience infectious skin disorders are 71 people while the elderly who experience allergic skin diseases are 547 people (Sumaryati, 2016), elderly patients need special attention, because elderly patients often have more than one disease or multipathology. One of them is infectious diseases, one of which is on the skin which is prone to occur in elderly patients due to a decrease in the body's functional reserves, decreased immunity. As well as experiencing immunosenescence or decreased immunity in a person against exposure to external antigens due to age. So that the body's immune response against infection defense decreases, making it susceptible to infection accompanied by severe complications. When infected, controlling the disease will be more difficult, thereby increasing the mortality rate in the elderly. Infections in the elderly can be caused by bacteria, viruses, fungi and others on the skin. Immunosenescence is a concept related to the balance of immune isoforms, dysregulation of the immune system associated with the risk of infection in the body reflecting age-related immunological changes (Marisa, 2020).

In this study, it was obtained from malignant skin disease data in medical records in patients at the Dermatology and Venereology Outpatient clinic Dr. Soetomo General Academic Surabaya is not many in number, but it remains our vigilance. Because, lesions in elderly patients can be a higher malignancy. Factors that affect mainly exposure to ultraviolet light and familial factors. Benign tumors on the face that are often found include seborrheic keratosis, skin tags, syringoma, nevus pigmentosus, xanthelasma, sebaceous hyperplasia, cysts, and other types of tumors. In the Australian population found aged 26-50 years, 100% aged 51-75 years, and 100% aged > 75 years. There is a familial predisposition, sun

exposure, and infection. Individuals with a large number of lesions, one of which is seborrheic keratoses, usually have a family history of the same lesions. This familial tendency is inherited in an autosomal dominant manner. Epidermal growth factors and their receptors are thought to play a role in the formation of seborrheic keratoses. A number of mutations in the tyrosine kinase receptor gene FGFR3 (fibroblast growth factor receptor 3) are common in some types of seborrheic keratoses. A study in Australia that looked at the distribution of 3067 KS lesions in 100 patients, found the highest distribution of lesions on the trunk at 54.7%, hands 15.2%, face and neck at 11.4% (Mawu, 2016).

Table 5.7 shows that elderly patients in the Dermatology and Venereology Outpatient clinic Dr. Soetomo General Academic Surabaya for the 2019-2020 period received systemic and topical therapy. The most widely administered topical therapy was atopiclair cream lot cream group with a total of 99 patients or (32.14%). Meanwhile, the most systemic therapy was given to the category of antihistamine, cetirine, with 128 patients (65.31%). There are many patients who receive more than one therapy, one of which is the antihistamine class of drugs cetirizine, treatment in systemic therapy for the first line is an oral drug that reduces itching because there are complaints of a lot of itching. elderly patients (> 65 years) especially for patients with impaired cognitive function because of the less sedative effect compared to the first generation. Therapy should be given with supervision because of the possibility of impaired liver and kidney function in the patient causing impaired elimination. Administration of cetirizine concurrently with food does not reduce the absorption of cetirizine, but can reduce the rate of absorption for 1 hour. Oral antihistamines can also prevent urticaria and are used to treat skin rashes in urticaria, itching, insect bites and stings, and drug allergies. Chlorpheniramine or promethazine injection is used as adjunctive therapy in the emergency treatment of anaphylaxis and angioedema with adrenaline. Concomitant use of cetirizine and ritonavir may increase the half-life and reduce clearance.

5. Conclusion

This study concluded that 299 elderly patients visited Dermatology and Venereology Outpatient clinic Dr. Soetomo General Academic Surabaya in the period of two years (2019-2020) had xerosis cutis, seborrheic dermatitis and lichen simplex as the most common skin diseases.

Reference

- Ahmad, Z. and Damayanti (2018) 'Penuaan Kulit: Patofisiologi dan Manifestasi Klinis', Berkala Ilmu Kesehatan Kulit dan Kelamin – Periodical of Dermatology and Venereology, 30(03), pp. 208–215.
- Ali, S. Y., Reddy, G. S. and Sravanthi, P. (2017) 'A clinical study of dermatological manifestations in elderly patients in Shadan Institute of Medical Sciences and Teaching Hospital and Research Centre ', 3(March), pp. 24–28. doi: [10.18231/2455-6769.2017.0007](https://doi.org/10.18231/2455-6769.2017.0007).
- Aman, B. S. et al. (2020) 'Skin infection risk factors and its management Skin infection risk factors and its management Center for Advanced Studies in Vaccinology and Biotechnology , University of Balochistan , Quetta ', Journal of Biodiversity and Environmental Sciences, 2(6), pp. 34–56.
- American Heart Association (AHA). (2015). Life Is Why: Guidelines For Cardiopulmonary & Emergency Cardio Care.
- Amirlak B, 2017, Skin Anatomy, Department Of Dermatology, New York University, [online] Diakses <https://emedicine.medscape.com/article/1294744-overview> [Diakses pada tanggal 3 Juni 2021].
- Anderson, P.D. (1999). Anatomi fisiologi tubuh manusia. Jones and Barret publisher Boston. Edisi Bahasa Indonesia. Jakarta: Penerbit Buku Kedokteran EGC.
- Anggowarsito, J. L. (2014) 'Aspek fisiologi penuaan kulit', Widiya Medika Surabaya, 2(1), pp. 56–61.
- Azizah & Lilik Ma'rifatul, (2011). Keperawatan Lanjut Usia. Edisi 1. Yogyakarta :Graha Ilmu.
- Badan Pusat Statistik Jakarta Pusat , 2010. Statistik Indonesia Tahun 2010. [online] Diakses dari: <https://www.bps.go.id/> [Diakses pada tanggal 30 Mei 2021].
- Badan Pusat Statistik, 2010. Data Statistik Indonesia. Jumlah Penduduk menurut Kelompok Umur, Jenis Kelamin, Provinsi, dan Kabupaten/Kota, 2005.
- Baur, D. B. (2012) 'The Pattern of Dermatological Disorders among Patients Attending the Skin O.P.D of A Tertiary Care Hospital in Kolkata, India.', IOSR Journal of Dental and Medical Sciences, 3(4), pp. 4–9. doi: 10.9790/0853-0340409.
- Bianti, M. (2016) 'Continuing Medical Education Akreditasi PB IDI-2 SKP Kulit Kering pada Usia Lanjut', www.ijrp.org, 43(10), pp. 737–740.
- Bilgili SG, Karadag AS, Ozkol HU, Calka O, Akdeniz N. The prevalence of skin diseases among the geriatric patients in Eastern Turkey. J Pak Med Assoc. 2012 Jun;62(6):535-9. PMID: 22755334.

- BPOM, 2015, Antihistamin, Hiposensitisasi dan Kedaruratan Alergi, Badan Pengawas Obat dan Makanan Republik Indonesia, Jakarta.
- BPS, Bappenas, UNFPA. Proyeksi Penduduk Indonesia 2010-2035. Jakarta; 2013. [online] Diakses dari: https://www.bappenas.go.id/files/5413/9148/4109/Proyeksi_Penduduk_Indonesia_2010-2035.pdf [Diakses pada tanggal 23 Mei 2021].
- Butarbutar, M. E. T. and Chaerunisaa, A. Y. (2020) 'Peran Pelembab dalam Mengatasi Kondisi Kulit Kering', *Majalah Farmasetika*, 6(1). doi: 10.24198/mfarmasetika.v6i1.28740.
- Centers for Disease Control and Prevention.. Skin Infections. [online] Diakses dari : <https://www.cdc.gov/antibiotic-use/skin-infections.html> [Diakses pada tanggal 23 Mei 2021].
- Chindy, T. Iestari, Isti, N. dan Nugrahaeni, S. dan (2019) 'Hubungan Asupan Natrium Kalium Dan Lemak Dengan Tekanan Darah Pada Pasien Hipertensi', *Respiratory Poltekkesjogja*, 7, pp. 9–29.
- Chowdhury, S. and Chakraborty, P. pratim (2017) 'Universal health coverage - There is more to it than meets the eye', *Journal of Family Medicine and Primary Care*, 6(2), pp. 169–170. doi: 10.4103/jfmpc.jfmpc.
- Damayanti (2017) 'Penuaan Kulit dan Perawatan Kulit Dasar pada Usia Lanjut (Skin Aging and Basic Skin Care in Elderly)' *Berkala Ilmu Kesehatan Kulit dan Kelamin*, 29, pp. 73–80.
- Diatmika, I. K. D. P., Artini, G. A. and Ernawati, D. K. (2018) 'Profil Efek Samping Kaptopril pada Pasien Hipertensi di Puskesmas Denpasar Timur I Periode Oktober 2017', *E-Jurnal Medika Udayana*, 7(5), p. p221.
- Galperin TA, Cronin AJ, Leslie KS. Cutaneous manifestations of ESRD. *Clin J Am Soc Nephrol*. 2014;9(1):201–18.
- Githa Rahmayunita. 2017. Pendekatan Diagnostik Dan Penerapan Demam. Toterapi Berbasis Bukti. Jakarta: Departemen Ilmu Kesehatan Kulit dan Kelamin FKUI- RSCM
- Guyton A.C. and J.E. Hall 2007. Buku Ajar Fisiologi Kedokteran. Edisi 9. Jakarta: EGC. 74,76, 80-81, 244, 248, 606,636,1070,1340.
- Healthline. Skin Infection: Types, Causes, and Treatment. [online] Diakses dari : <https://www.halodoc.com/artikel/mengapa-lansia-rentan-mengalami-infeksi-kulit> [Diakses pada tanggal 23 Mei 2021].
- Hidajat, D., Hapsari, Y. and Hendrawan, I. W. (2014) 'Di Poliklinik Kulit Dan Kelamin Rsu Provinsi Nusa Tenggara Barat Periode 2013-2014', *Jurnal Kedokteran*, 6(4), p. 2014.
- IGAA Dwi Karmila. *Bali Dermatology and Venereology Journal* 1 (1), 16-19, 2018.
- Jafferany, M. et al. (2012) 'Geriatric dermatoses: A clinical review of skin diseases in an aging population', *International Journal of Dermatology*, 51(5), pp. 509–522. doi: 10.1111/j.1365-4632.2011.05311.x.
- Jones, S. R. (1990). *Infections in frail and vulnerable elderly patients*. The American Journal of Medicine, 88(3), S30–S33. [https://doi.org/10.1016/0002-9343\(90\)90085-r](https://doi.org/10.1016/0002-9343(90)90085-r)
- Junqueira, L.C. & Jose Carneiro (1980). *Basic histology*. California: Lange Medical Publications.
- Kalangi, S. J. R. (2014) 'Histofisiologi Kulit', *Jurnal Biomedik (Jbm)*, 5(3), pp. 12–20. doi: 10.35790/jbm.5.3.2013.4344.
- Kemkes RI. 2013. Riset Kesehatan Dasar. Jakarta : Badan Penelitian dan Pengembangan Kesehatan Kementerian Kesehatan Republik Indonesia [online] Diakses dari: <https://pusdatin.kemkes.go.id/download.php?file=download/pusdatin/profil-kesehatan-indonesia/profil-kesehatan-indonesia-2013.pdf> [Diakses pada tanggal 30 Mei 2021].
- Kemkes RI. 2016. Situasi Lanjut Usia (Lansia) di Indonesia. Infodatin Pusat Data dan Informasi Kementerian Kesehatan Republik Indonesia. ISSN 2442-7659.
- Kemkes RI. Info DATIN Lansia. Jakarta: Kementerian Kesehatan RI; 2014. [online] Diakses dari: <https://pusdatin.kemkes.go.id/resources/download/pusdatin/infodatin/Infodatin-lansia-2016.pdf> [Diakses pada tanggal 28 Mei 2021].
- Kemkes RI. Profil Kesehatan Indonesia 2014. Jakarta: Kementerian Kesehatan RI, 2015. [online] Diakses dari: <https://pusdatin.kemkes.go.id/resources/download/pusdatin/profil-kesehatan-indonesia/profil-kesehatan-indonesia-2014.pdf> [Diakses pada tanggal 28 Mei 2021].
- Kemkes. 2011. Profil Kesehatan Tahun 2011. Jakarta: Keputusan Menteri kesehatan. [online] Diakses dari: https://pusdatin.kemkes.go.id/resources/download/profil/PROFIL_KES_PROV_2011/P.Prov.JATIM_11.pdf [Diakses pada tanggal 30 Mei 2021]. www.tjrp.org
- Kementerian Kesehatan RI. 2018. Profil Kesehatan Indonesia 2017. Jakarta: Kemkes RI. [online] Diakses dari: https://pusdatin.kemkes.go.id/resources/download/pusdatin/profil-kesehatan-indonesia/PROFIL_KESEHATAN_2018_1.pdf [Diakses pada tanggal 25 Mei 2021].

- Kemkes.go.id. (2021). Kementerian Kesehatan Republik Indonesia [online] Diakses dari <http://www.p2ptm.kemkes.go.id/kegiatan-p2ptm/aceh/populasi-lansia-diperkirakan-terus-meningkat-hingga-tahun-2020> [Diakses pada tanggal 10 Juni 2021].
- Kessel RG. Basic Medical Histology. The biology of Cells, Tissues, and Organs. New York: Oxford University Press; 1998.
- 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*. 2001;203(4):308-13.
- Live Science. Diakses pada 2021. Aging Lowers Your Immunity. [online] Diakses dari: <https://www.livescience.com/26579-immune-system.html> [Diakses pada tanggal 30 Mei 2021].
- Madhulika A, Gupta MD, Gilchrest B A (2005) Psychosocial aspects of aging skin. *Dermatology Clinics* 23(4): 643–48
- Marisa, Y. T. and Mulyana, R. (2020) ‘Infeksi Jamur Pada Geriatri’, *Human CareJournal*, 5(1), p. 328. doi: 10.32883/hcj.v5i1.615.
- Mawu, F. O. (2016) ‘Tumor jinak kulit pada wajah’, *e-CliniC*, 4(1). doi:10.35790/ecl.4.1.2016.11488.
- Mescher AL. Junqueira’s Basic Histology Text & Atlas. New York: McGraw Hill Medical; 2010
- Neo, A. G. et al. (2009) Photocyclization of tosylstilbenes as a key reaction in the preparation of an analogue of the antitumor agent CC-1065, *Journal of Organic Chemistry*. doi: 10.1021/jo900140t.
- Nugroho, Wahjudi. (2000). Keperawatan Gerontik. Jakarta : Penerbit Buku Kedokteran EGC.
- Pardede, S. O. (2016) ‘Pruritus Uremik’, *Sari Pediatri*, 11(5), p. 348. doi:10.14238/sp11.5.2010.348-54.
- Peraturan Menteri Kesehatan Republik Indonesia Nomor 209/Menkes/Per/III/2008 Tentang Persetujuan Tindakan Kedokteran [online] Diakses dari: http://www.kki.go.id/assets/data/arsip/Permenkes_No_290_Tahun_2009_tentang_Persetujuan_Tindakan_Kedokteran.pdf [Diakses pada tanggal 23 Mei 2021].
- Perhimpunan Dokter Spesialis Kulit dan Kelamin Indonesia (PERDOSKI). PanduanPraktik Klinis bagi Dokter Spesialis Kulit dan Kelamin di Indonesia. Jakarta:PERDOSKI; 2017.
- Potter & Perry. 2009. Fundamental Keperawatan. Edisi 7. Jakarta : Salemba Medika Rahayu Tutik & Retno Dwi. 2009. Pruritus. Vol XXXI No 115 Maret 2009. Majalah Ilmiah Sultan Agung.
- Republik Indonesia. Undang-Undang Republik Indonesia Nomor 13 tahun 1998 tentang Kesejahteraan Lanjut [online] Diakses dari: Usia 1998. <http://www.bphn.go.id/data/documents/98uu013.pdf> [Diakses pada tanggal 23 Mei 2021].
- Roger Watson. (2002). Anatomi dan Fisiologi untuk Perawat. Alih Bahasa Sitti Sabariyah. Jakarta: Penerbit Buku Kedokteran EGC.
- Royal College of Physicians. (2017). National Early Warning Score (NEWS) 2: Standardising the assessment of acute-illness severity in the NHS. London: RCP
- SEER Training Modules, Layers of the Skin . U. S. National Institutes of Health, National Cancer Institute. [online] Diakses dari: <https://training.seer.cancer.gov/melanoma/anatomy/> [Diakses pada tanggal 4 Juni 2021].
- Sherwood, Lauralee. (2014). Fisiologi Manusia Dari Sel ke Sistem. Edisi 8. Jakarta :EGC
- Sherwood, Lauralle (2001). Fisiologi manusia. Jakarta: Penerbit Buku Kedokteran EGC.
- Souissi A, Zeglaoui F, El Fekih N, Fazaa B, Zouari B, Kamoun MR. Skin diseases in the elderly: a multicentre Tunisian study. *Ann Dermatol Venereol*. 2006;133(3):231-4.
- Sumaryati, Maria. "Tingkat Pengetahuan dan Sikap Lansia Tentang Penyakit Dermatitis di Wilayah Kerja Puskesmas Batua Kota Makassar." *Jurnal Ilmiah Kesehatan Sandi Husada*, vol. 4, no. 2, 2016, pp. 11-23.
- Survei Ekonomi Nasional (Susenas) Tahun 2017, Badan Pusat Statistik RI. [online] Diakses dari: <https://www.bps.go.id/publication/2017/12/28/5dc3593b43f3d4ac1fb77324/statistik-kesejahteraan-rakyat-2017.html> [Diakses pada tanggal 25 Mei 2021].
- Tranggono RI dan Latifah F, 2007, Buku Pegangan Ilmu Pengetahuan Kosmetik, PT. Gramedia Pustaka Utama, Jakarta; Hal. 11.
- Watson, K. Healthline (2018). The Layers of Your Skin [online] Diakses dari: <https://www.healthline.com/health/layers-of-skin#The-takeaway> [Diakses pada tanggal 3 Juni 2021].
- WHO. World Health Statistic Report 2015. Geneva: World Health Organization; 2015 Widyastuti, R. et al. (2020) ‘Terapi Farmakologis Urtikaria Kronik Spontan Pharmacological Therapy of Chronic Spontaneous Urticaria’, *Mdvi*, 47(6), pp. 51–57. *www.ijrp.org*
- Wingfield, C. (2012) ‘Changes that occurs in older people’s skin’, *Wounds Essentials*, 7(2), pp. 52–59.
- Yalcin, B., Tamer, E., Toy, G. G., Oztas, P., Hayran, M., & Alli, N. (2006). The prevalence of skin diseases in the elderly: analysis of 4099 geriatric patients. *International Journal of Dermatology*, 45(6), 672–676.

<https://doi.org/10.1111/j.1365-4632.2005.02607.x>

Yonathan, E. L. and Darmawan, H. (2021) 'Manifestasi Dermatologik Pada Pasien Gagal Ginjal Kronis', Tarumanagara Medical Journal, 3(2), pp. 442–451. Available at: <https://journal.untar.ac.id/index.php/tmj/article/view/11764>.

Yusharyahya, S. et al. (2017) 'Profil pasien pruritus di Poliklinik Kulit dan Kelamin Divisi Dermatologi Geriatri RSCM Jakarta', Mdvi, 44(3), pp. 103–10.