Skin Aging Profile in Tertiary Hospital: a Descriptive Study

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ABSTRACT

Background: Skin aging is a physiological process that involves changes in skin cells and tissues due to abnormal mechanisms and decreased tissue function caused by both intrinsic and extrinsic factors. Skin aging has different clinical manifestations in each individual, which were classified using Glogau's photoaging classification. **Purpose:** The objective of this descriptive observational study is to evaluate the profile of skin aging patients at Dr. Soetomo General Hospital Surabaya from January – December 2019. **Methods:** This study utilized a total sampling technique from data obtained from the patients' medical records, which included age, gender, occupation, anamnesis, physical examination, diagnosis, and treatment received by patients. This research has been reviewed by the Ethics Committee at Dr. Soetomo General Hospital Surabaya (0438/KEPK/XII/2021). **Result:** Based on data obtained from medical records, 415 samples of skin aging patients were collected. The highest number of cases occurred among patients aged 45 - < 60 years. Most patients were female, and the majority of patients' occupations were private employees. History taking findings include the most common complaint, namely dull skin, with the most precipitating factors discovered in patients, namely exposure to sunlight and pollution. Wrinkles were the most common physical examination finding in patients, with Glogau's photoaging III being the most common diagnosis. Most patients were treated with photoprotection in the form of sunscreen. **Conclusion:** With the increase of public awareness about appearance, as well as human health and quality of life, skin aging is receiving adequate attention nowadays, with sun exposure being the most common precipitating factor.

Keywords: Human & health, photoaging, photoprotection, skin aging, ultraviolet radiation.

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BACKGROUND

Skin aging is a physiological process characterized by changes in skin cells and tissues induced by a variety of internal and external factors.[1]Despite the fact that the skin has numerous defense mechanisms, these abilities can deteriorate over time.[2]Aside from its protective function for the body, the skin also serves an important cosmetic function. Many people, particularly women, spend lots of money on anti-aging cosmetics and medications.[3] Skin damage is more than just a cosmetic issue as we age. Although the majority of skin disorders are not life-threatening, they do have an impact on human health and quality of life.[4]

The elderly population ratio has risen in both developed and developing countries.[4] In 2000, there were 35 million people (13 percent of the population) in the United States who were 65 or older. By 2020, the number is expected to rise to around 53 million people, or roughly one-quarter of the total population. This will have a greater impact on developing countries than developed ones. For example, the elderly population in Indonesia will increase by 414 percent over the next 50 years.[5]

In 2017, a retrospective study was conducted on the profile of skin rejuvenation patients at the Outpatient Unit Dermatology and Venereology Department at Dr. Soetomo General Hospital Surabaya, with a total sample of 203 samples (198 women and 5 men). According to the study's findings, the highest age group from 45 to 60 years had 94 (46.31 percent) patients. Civil servants are the most common occupational group, accounting for 62 (30.54 percent) of the samples. Glogau's Photoaging II was the most commonly diagnosed group, accounting for 79 (38.91 percent) of all patients. The most common history taking distribution result was sun exposure, which accounted for 183 (50.27 percent) of all samples. The most common history taking distribution result was sun exposure, which accounted for 183 (50.27 percent) of

all samples. While the distribution of skin rejuvenation therapy types obtained the most groups, namely photoprotection in the form of SPF 30 sunscreen, with 136 (16.98 percent) samples.[1]Moreover, because Indonesia is located on the equator and has a tropical climate with high levels of sun exposure, it is essential to examine the characteristics of photoaging patients.[6]

Based on the explanation above, skin aging is a physiological and natural process that everyone will experience. Skin aging is also receiving adequate attention these days, particularly among women, because it affects health and quality of life, as well as the growing elderly population. Furthermore, not many studies in Indonesia that have reported on the profile of skin aging patients. As a result, the researcher wanted to conduct additional research on the profiles of skin aging patients in the Outpatient Unit Dermatology and Venereology Department at Dr. Soetomo General Hospital Surabaya from January to December 2019, which included age, gender, occupation, diagnosis, anamnesis, physical examination, and treatments received by the patients.

METHODS

The purpose of this retrospective descriptive study was to evaluate the profile of skin aging patients at the Outpatient Unit Dermatology and Venereology at Dr. Soetomo General Hospital Surabaya from January to December 2019. This study utilized a total sampling technique from data obtained from the medical records of skin aging patients. The inclusion criteria used were patients diagnosed with Glogau's photoaging, which is based on patients' clinical symptoms. Data collected includes age, gender, occupation, anamnesis, physical examination, diagnosis, and treatment received by patients. This research was conducted at the Outpatient Unit Dermatology and Venereology at Dr. Soetomo General Hospital Surabaya from April 2020 to March 2021. The collected data is then processed through data processing stages such as coding, entry, and cleaning. The data was analyzed descriptively. Data that has been grouped based on variables is presented using a frequency distribution table. This study was approved by the Ethics Committee review in Dr. Soetomo General Hospital Surabaya (0438/KEPK/XII/2021).

RESULT

This was a descriptive observational study based on secondary data from the medical records of skin aging patients in the Outpatient Unit Dermatology and Venereology Department at Dr. Soetomo General Hospital Surabaya during the period of January – December 2019. The samples in this study were taken from all patients with skin aging using a total sampling technique. From medical records includes basic patient information such as age, gender, and occupation, as well as the patients' anamnesis, physical examination, diagnosis, and treatment received by patients. The total number of samples obtained in this study was 415 skin aging patients. Data were then descriptively processed using SPSS and presented in the form of a frequency distribution table.

Table 1. Age distribution of skin aging patients

Age Group (years)	Frequency	Percentage (%)
10 - < 20	15	3.6
20 - < 45	170	41.0
45 - < 60	189	45.5
≥ 60	41	9.9
Total	415	100

According to the research findings, the distribution of age groups of skin aging was highest in the 45 - <60 age group with 189 (45.5%) patients, and lowest in the 10 - <20 age group with 15 (3.6%) patients, The youngest patient was 4 years old, and the oldest patient was 118 years old.

Table 2. Gender distribution of skin aging patients

Gender	Frequency	Percentage (%)
Male	12	2.9
Female	403	97.1
Total	415	100

The finding of this study discovered that female patients were the most common gender among skin aging patients, with 403 patients (97.1%), while male patients were 12 (2.9 %).

Table 3. Occupational distribution of skin aging patients

Occupation	Frequency	Percentage (%)
Civil servants	25	6.0
Private employees	122	29.4
Entrepreneur	5	1.2
Housewife	77	18.6
Student	34	8.2
Retired	13	3.1
Teacher	5	1.2
Doctor	2	0.5
Trader	1	0.2
Does not work	4	1.0
No Data	127	30.6
Total	415	100

According to this study's findings, the majority of the skin aging patients were private employees, with 122 patients (29.4%), followed by housewives with 77 patients (18.6%), students with 34 patients (8.2 %), and civil servants with 25patients (6.0%). Meanwhile, other jobs that accounted for fewer than 20 patients included retirees, entrepreneurs, teachers, traders, doctors, and patients who do not work.

Table 4. Complaints distribution of skin aging patients

Complaint	Frequency	Percentage (%)
Dull skin	399	96.1
Wrinkles	109	26.3
Large pores	55	13.3
Dark spots	44	10.6
Dry/flaky skin	23	5.5
Small white nodules	6	1.4
Eye bags	5	1.2
Oily skin	4	1.0
Pimple/rash	4	1.0
Uneven skin tone	3	0.7
Itchy	3	0.7
Rough	3	0.7
Stings	3	0.7
Redness	2	0.5
Loose skin	1	0.2

Description: one patient may have more than one complaint.

Table 5. Precipitating factors distribution of skin aging patients

Precipitating Factor	Frequency	Percentage (%)
Frequent exposure to the sun and pollution	90	21.7
Frequent exposure to smoke from cooking	25	6.0
Contraceptive use	5	1.2
Frequent exposure to cigarette smoke	3	0.7
Menopause	3	0.7
Pregnant/breastfeeding	3	0.7

Description: one patient may have more than one precipitating factor.

The results of patients' skin aging history taking includes complaints as well as precipitating factors for skin aging. The most common complaints experienced by patients with aging skin, were dull skin in 399 (96.1%) patients, wrinkles in 109 (26.3%) patients, large pores in 55 (13.3%) patients, and 44 (10.6)

patients with dark spots. Dry skin, white nodules, eye bags, oily skin, breakouts, uneven skin tone, itching, roughness, redness, stings, and looseness are also reported by some patients.

Aside from the patient's complaints, the results of the anamnesis reveal factors that can precipitate the onset of skin aging. The most common precipitating factors discovered in patients were frequent sun exposure and pollution in 90 (21.7%) patients. Other precipitating factors include cooking smoke exposure, contraception use, cigarette smoke exposure, menopause, and pregnancy/breastfeeding.

Some patients with aging skin have a history of previous diseases such as diabetes mellitus, hypertension, herpes zoster, Morbus Hansen, seborrheic keratosis, post-inflammatory hyperpigmentation, malar melasma, asthma, varicella, irritant contact dermatitis, allergic contact dermatitis, and systemic lupus erythematosus. Some patients also have allergies to mushrooms, seafood, chicken, shrimp, shellfish, as well as drug allergies such as amoxicillin and tetracycline allergies, cosmetic allergies, and cold allergies.

Table 6. Physical examination distribution of skin aging patients

Physical Examination	Frequency	Percentage (%)
Wrinkles	382	92.0
Hyperpigmented macules	176	42.4
Seborrheic keratosis	59	14.2
Telangiectasia	30	7.2
Papulopustular	30	7.2
Dyschromia	15	3.6
Xerosis	9	2.2
Eye bags	4	1.0
Large pores	3	0.7
Oily skin	3	0.7
Scales	2	0.5
Erythematous macules	2	0.5
Hypopigmented macules	1	0.2
Fissure	1	0.2
Plaque	1	0.2

Description: one patient may have more than one physical examination.

According to the findings of this study on skin aging patients, the results of the physical examination found the most in patients are wrinkles in 382 (92.0%) patients, followed by hyperpigmented macules in 176 (42.4%) patients, and seborrheic keratosis in 59 (14.2%) patients. Other physical examinations revealed dyschromia, xerosis, eye bags, large pores, oily skin, scales, erythematous macules, hypopigmented macules, fissures, and plaques in some patients.

Table 7. Diagnosis distribution of skin aging patients

Diagnosis	Frequency	Percentage (%)
Glogau's Photoaging I	62	14.9
Glogau's Photoaging II	156	37.6
Glogau's Photoaging III	168	40.5
Glogau's Photoaging IV	7	1.7
No data	22	5.3
Total	415	100

The most common skin aging diagnosis was Glogau's photoaging III, with 168 (40.5%) patients, followed by Glogau's photoaging II, with 156 (37.6%) patients.

There are a variety of treatments received by skin aging patients, including skin care, photoprotection, topical pharmacology, systemic therapy, and physical therapy. The most widely received treatment by skin aging was sunscreen, which was used by 363 (87.5%) patients, and the least received treatment is gluconolactone topical cream, with 2 (0.5%) patients.

Table 8. Treatment distribution of skin aging patients

Treatment	Frequency	Percentage (%)
Skin care		
Cleanser	239	57.6
Moisturizer	25	6.0
Toner	4	1.0
Face Powder	4	1.0
Photoprotection		
Sunscreen	363	87.5
Topical Pharmacology		
Tretinoin0,025/0,05/0,1%	292	70.4
GlycolicAcid5/8/10%	219	52.7
Topical Corticosteroids	60	14.5
Gentamicin 0.1%	52	12.5
Clindamycin 1.2%	9	2.2
Kligmann's Formula	8	1.9
Benzoyl peroxide 5%	5	1.2
Azelaic Acid(AZA)10/20%	4	1.0
Gluconolactone	2	0.5
Nutricream	82	19.8
Systemic		
Vitamin E	45	10.8
Vitamin C	12	2.9
Physical Treatment		
Laser	105	25.3
Chemical peeling	54	13.0
Microneedling	34	8.2
Microdermabrasion	8	1.9
Botox	4	1.0
Fillers	4	1.0
AMSC MP	67	16.1

Description: one patient may have more than one therapy.
AMSC MP: Amniotic Membrane Stem Cell Metabolite Product

DISCUSSION

The patient age classification is based on World Health Organization (WHO) classification, which divides the age into several groups, namely 1 - <10 years for children, 10 - <20 years for adolescents, 20 - <45 years for young adults, 45 - <60 years for old adults, and 60 and over for the elderly.[1] The ratio of collagen types in the skin changes with age. Young skin is made up of approximately 85% type I collagen and 15% type III collagen. Each year, the ability to naturally reproduce collagen decreases by about 1.0 to 1.5%. This decrement in collagen is one of the hallmarks associated with the appearance of fine lines and deeper wrinkles. Furthermore, the main components of the extracellular matrix, fibrillar collagen, elastin fibers, and hyaluronic acid, undergo structural and functional changes.[7]This is coherent with the findings of this study, which revealed that the majority of patients with skin aging were between the ages of 45 and 60. Due to excessive sun exposure, especially with global warming nowadays, mild Glogau photoaging (which is based on clinical symptoms) can occur in patients aged under 20 years. That is why patients aged under 20 years were still included as research subjects. The youngest patient with skin aging was 14 years old, and the oldest patient was 118 years old. The 14-year-old patient complained of dull skin, with physical examination findings of indistinct hyperpigmented macules and pigment changes, and the patient's diagnosis was Glogau's photoaging I, a mild form of photoaging. Meanwhile, the oldest patient, 118 years old, presented with complaints of a dull face, and the precipitating factor was discovered to be frequent outdoor exposure to sunlight. The physical examination results revealed the presence of indistinct hyperpigmented macules, wrinkles, and pigment changes, leading to the diagnosis of Glogau's photoaging III.

Skin aging that is very visible often causes psychological stress. Although dermatological disorders are rarely fatal, they can significantly reduce a person's quality of life.[4] Aside from its protective function, the skin also serves an important cosmetic function, particularly for women. Many women spend lots of money on cosmetics and drugs to prevent skin aging.[3] A study also showed that men have thicker skin than women, but women have thicker subcutaneous tissue. Androgen hormones play an important role in dermis regulation, as evidenced by men having a thicker dermis layer than women.[8]This is consistent with the findings of this study, which discovered that female patients were the most common gender among skin aging patients.

The amount of sunlight an individual is exposed to on their skin can be affected by their job. Patients who work outside are more likely to be exposed to ultraviolet radiation, which can cause photoaging of the skin. Chronic sun exposure can cause a decrease in skin elasticity, wrinkle depth, and skin color changes.[9] Patients who work indoors or outdoors face the risk of skin aging (photoaging) if proper precautions and protection are not taken. As stated in the preceding paragraph, patients who work outside are more likely to be exposed to ultraviolet radiation, which can cause signs of photoaging on the skin.[9] On the other hand, he appearance of skin aging signs can be caused by the non-routine use of sunscreen and the repetition of its application over a long period of time.[10] Furthermore, a lack of skin protection against sun exposure indoors can affect skin aging in patients who work indoors. Sunlight contains ultraviolet A (UVA), which plays an important role in photoaging and can damage the epidermis and dermis layers.[2] UVA rays can penetrate window glass and are present throughout the day, both in the morning and evening. As a result, for both indoor and outdoor work, it is essential for patients to use sunscreen to protect themselves from exposure to indirect sunlight.[11] This study could not conclude the relationship between occupation and skin aging experienced by the skin aging patients in the outpatient unit Dermatology and Venereology Department at Dr. Soetomo General Hospital Surabaya from January to December 2019.

Skin aging is a natural process in which the dermis, which is composed of a collagen-rich extracellular matrix that provides structure and support to the skin, undergoes the majority of the changes. The epidermis also experiences significant changes, particularly the accumulation of corneocytes, which causes the skin to appear dull and rough.[12] Other studies have found that the most common signs of aging are wrinkles, pigmentation, dullness, and dry skin.[13] Pigmentation becomes uneven with age in areas that are chronically exposed to the sun, and mottled pigmentation is an indication of photoaging skin. Age spots, freckles, and seborrheic keratosis are the most prevalent pigmented lesions on photoaging skin.[14] In addition, as an early marker of skin aging, enlarged facial pores is one of the most common aesthetic problems.[15] The layers of the epidermis and dermis atrophy with age, causing the skin to thin, become transparent, appear more fragile, and feel dry and itchy. The occurrence of sunken cheeks and eye bags is also caused by the thinning of fat tissue on the face.[16]

According to a research, chronic exposure to solar ultraviolet radiation is a main factor in the incidence of extrinsic skin aging, also known as photoaging.[3]Additionally, other studies have shown that air pollution is likely to be hazardous to the skin. Two hypotheses about how air pollution can affect the skin: direct skin penetration and particulate-induced systemic inflammation in the lungs and circulation. However, it is unknown which path or combination of paths explains the correlation between air pollution and skin aging.[17] Smoke from cooking is also a source of irritation for some skin aging patients. Indoor air pollution can induce more perceptible skin aging. A study from China was the first to explain the correlation between cooking-related indoor air pollution and skin aging symptoms. The study provides epidemiological evidence that indoor air pollution from solid fuel cooking is associated with higher rates of wrinkling manifestations in women in China.[18]However, no data on patients cooking with solid fuels, gas, or electricity was found. As a result, this study was unable to draw any conclusions about the correlation between cooking activities and skin aging in patients.

Collagen and elastin levels rise significantly during pregnancy, then drop drastically during involution. It has been proven that a decrease in estrogen concentration leads to a decrease in skin thickness and collagen content. Menopause symptoms include decreased skin elasticity and skin hydration.[7]A study also showed that estrogen-containing oral contraceptives can cause facial hyperpigmentation.[19] Cigarette smoking is another factor contributing to skin aging. Tobacco smoke is toxic to cells and can contribute to skin damage. Secondary smoke exposure impairs the function of many organs, specifically the skin, which can cause poor wound healing, squamous cell carcinoma, melanoma, and premature skin aging.[20]

Several mechanisms have been proposed to explain how high glucose levels contribute to skin aging. In human skin fibroblasts, hyperglycemia causes premature cellular aging. Several studies have also

have shown that culture of human fibroblasts under hyperglycemic conditions increases the amount of reactive oxygen species at the cellular level as well as the induction of premature cellular senescence.[21] Seborrheic keratosis is one of the skin aging signs that occurs in the elderly, particularly in areas exposed to sunlight.[22] Similar to chloasma or melasma, areas exposed to chronic sunlight develop uneven pigmentation and spots that are characteristic of aging skin.[14]

Clinical manifestations of skin aging in each individual may differ. Clinical manifestations of intrinsic aging can include telangiectasia, ecchymosis, seborrheic keratosis, lentigines, milia, and a variety of premalignant or malignant lesions.[5] Meanwhile, skin characteristics in extrinsic aging are characterized by deep, rough, pale or yellow wrinkles, increased fragility, purpura formation, mottled pigment changes, and impaired wound healing as a consequence of sun exposure.[2]Extrinsic aging is also associated with clinical symptoms such as telangiectasia, ecchymosis, seborrheic/keratosis, lentigines, comedones, dry skin (xerosis) with scaling, uneven pigmentation lesions, atrophy, and an increase in the number of premalignant or malignant lesions.[5]

A study showed that the depth of wrinkles correlates with age and duration of UV radiation exposure. Moreover, ultraviolet radiation affects skin elasticity, stimulates sebaceous gland hypertrophy, and enlarges skin pores. The greater the total dose of UV radiation received by the subject over the course of his or her life, the deeper the wrinkles and the less elastic the skin. UV radiation is another exogenous factor that is widely discussed as a potential cause of skin discoloration.[9] Melanin pigmentation is critical in protecting the skin from the damaging effects of ultraviolet radiation. Abnormal skin pigmentation is caused by an excess of melanin or a deficit of melanin. Pigmentation abnormalities are a common symptom of aging skin.[22] Seborrheic keratosis, a benign skin tumor that manifests as well-defined light brown to black papules with more melanin, develops in the elderly, notably in sun-exposed areas. In the case of hypomelanosis, vitiligo is a skin condition associated with the premature aging of skin cells.[22]Besides that, photoaging is also characterized by rough, loose skin with rough wrinkles, blood vessels that appear “damaged” (telangiectasia), and uneven pigmentation with brown spots.[14]

The classification of photoaging diagnoses is based on the severity of the patient's symptoms. Glogau's photoaging classification, first discovered by Glogau in 1996, can be used to determine the severity.[5] Glogau type III, also known as advanced grade, is characterized by facial wrinkles at rest, marked dyschromia, and visible keratosis, and usually appears around the age of 50. Meanwhile, Glogau type II, or moderate degree, usually appears between the ages of 30 and 40.[5] This is consistent with the findings of this study, which discovered that the majority of patients with aging skin were aged 45 - 60 years, implying that the majority of patients were around 50 years old and usually experienced Glogau type III, and aged around 40 years and usually experienced Glogau type II.

There are various types of skin aging therapy, including skin care, photoprotection, topical pharmacology, systemic, and physical treatment. Interventions against intrinsic aging are hard to implement, whereas prevention and treatment of extrinsic aging receive considerable attention.[2]Before deciding on the best strategy to deal with skin aging in each individual, many factors need to be considered, such as age, previous surgery history, general health status, skin type, lifestyle, and others.[23]

A healthy skin barrier can protect against dehydration, penetration of various microorganisms, allergens, irritants, reactive oxygen species, radiation, and increase regeneration and skin elasticity.[23]According to this study's findings, 239 patients (57.5%) received skin care in the form of cleanser, 25 patients (6.0%) received moisturizers, and 4 patients (1.0%) received toner and facial powder.

The most widely received treatment by skin aging patients in the Outpatient Unit Dermatology and Venereology Department at Dr. Soetomo General Hospital Surabaya from January to December 2019 was sunscreen, which was used by 363 (87.5%) patients. Sunscreen is highly recommended for reducing the skin-damaging effects of UV rays. Sunscreen can also help to prevent premature aging, sunburn, blemishes on the face, skin health, and skin cancer. SPF 15 sunscreen is adequate, but higher is preferable.[23]SPF measures the UVB rays that cause burning rather than the UVA rays that cause aging. SPF 15 is designed to protect the skin from harmful UV rays for approximately 150 minutes. SPF 15 provides 93% protection from UVB rays, SPF 30 provides 97% protection from UVB rays, and SPF 50 provides 98% protection from UVB rays. SPF 30 only provides 4% more protection than SPF 15, and SPF 50 provides about 5% more protection than SPF 15. So, it is a common misconception that a higher SPF provides more protection than a lower SPF.[24] Apart from using sunscreen, it is also critical to wear protective clothing or hats to avoid direct sunlight.[23]

Another skin aging therapy is topical pharmacology. Tretinoin was the most commonly used topical pharmacology, received by 292 (70.4%)

patients, followed by Glycolic Acid in 213 patients (51.3%). A study found that tretinoin improved the clinical appearance of photoaging skin. Tretinoin has been shown to reduce UV-induced premature aging signs such as wrinkles, loss of skin elasticity, and pigmentation.[23] Other topical pharmacology received by the patients were topical corticosteroids in the form of hydrocortisone 1% and mometasone furoate 0.1%; Gentamicin 0.1%; Clindamycin 1.2%; Kligman's formula consisting of a combination of tretinoin, hydroquinone, and a topical corticosteroid; Benzoyl peroxide 5%; Azelaic Acid (AZA); Gluconolactone; and Nutricream®.

Systemic therapy is another option for treating skin aging. There were 45 (10.8%) patients who were given vitamin E and 12 (2.9%) patients were given vitamin C as systemic therapy. Vitamins E and C are antioxidants that can help to reduce skin aging by neutralizing reactive oxygen species (ROS).[3] Vitamin E (α-tocopherol) has anti-inflammatory and antiproliferative effects that act by smoothing the skin and increasing the stratum corneum's ability to retain moisture, accelerating epithelialization, and contributing to skin photoprotection.[23]

Physical action is a form of skin aging therapy that is also accepted by skin aging patients. Various procedures are intended to remove damaged layers of skin and replace tissue with new collagen formation.[23] Laser was the most widely accepted physical procedure, with 105 (25.3%) patients, followed by chemical peeling with 54 (13.1%) patients, microneedling with 34 (8.2%) patients, microdermabrasion with 8 (1.9%) patients, botox and fillers with 4 (1.0 %) patients, and Metabolite Products Amniotic Membrane Stem Cell (AMSC MP) with 67 (16.1%) patients. Laser is an action that uses light at various frequencies to achieve clinical results, one of which is skin rejuvenation for dermatological indications. Patients were given fractional CO_2 lasers with a mixture of AMSC MP and vitamin E or vitamin C. Meanwhile, chemical peeling is a method that involves the chemical ablation of specific skin layers in order to induce even and firm skin as a result of regeneration and repair mechanisms following epidermis and dermis inflammation.[23] Patients were given a variety of chemical peels, including Glycolic Acid peels and Salicylic Acid peels.

Microneedling is also a method of aging therapy that involves the use of an instrument with rows of thin needles that penetrate the dermis to a required depth, causing a controlled skin injury. This controlled skin injury induces micropunctures that recover instantly and stimulate the production of collagen and elastin fibers, resulting in skin remodeling.[25]AMSC-MP therapy is regularly used with laser or microneedling procedures. Microneedling is used to optimize metabolite product penetration through the skin. For two weeks prior to the procedure, the patient was primed with tretinoin cream. The patient will then receive microneedling and AMSC MP three times at two-week intervals. Research has shown that there has been a significant clinical improvement in the photoaging of pores, wrinkles, and pigmentation spots. The improvement is due to melanin's association with stem cells and their beneficial effects on tissue regeneration via paracrine mechanisms as well as direct cellular effects. Besides, stem cells synthesize and release various extracellular matrix proteins, cytokines, and growth factors.[10] Patients are usually primed with a topical cream containing tretinoin and sunscreen prior to chemical peeling, laser, or microdermabrasion. Following the procedure, the patient will also be given postoperative care, which may include nutricream®, tretinoin topical cream, hydrocortisone, sunscreen, and moisturizer.

Two other types of physical treatment are fillers and botulinum injection. The outcome of skin bio-rejuvenation is to increase fibroblast biosynthetic capacity, induce optimal physiological environment reconstruction, increase cell activity, hydration, as well as collagen, elastin, and hyaluronic acid synthesis. Microinjections of hyaluronic acid, vitamins, minerals, nutrients, hormones, and amino acids into the superficial dermis can achieve the desired effect. The injection of hyaluronic acid is believed to boost skin rejuvenation by increasing hydration and fibroblast activation. Meanwhile, botulinum toxin (botox) has no effect on skin texture and cannot stop the aging process. However, botox injections can help minimize wrinkles and certain dynamic facial lines.[23]

The limitation of this study is that the data obtained is based solely on what was found in the medical records of skin aging patients in the Outpatient Unit Dermatology and Venereology Department at Dr. Soetomo General Hospital Surabaya from January to December 2019. Some medical records were obtained with incomplete data recording, which impacted the study's findings. It is hoped that in the future, data will be fully recorded in patient medical records, making it easier to review and research results more accurate, as well as for future prospective studies related to skin aging problems, such as comparisons of therapeutic efficacy or side effects of skin aging therapies.

Based on data obtained from medical records of skin aging patients at the RSUD Dr. Soetomo Surabaya Outpatient Dermatology and Venereology Unit from January to December 2019, 415 samples of skin aging patients were collected. The highest number of cases

occurred among patients aged 45 - < 60 years old with a total of 189 patients, and the majority of the patients were female with 403 patients. The majority of patient occupations were private employees, with a total of 122 patients. The findings of anamnesis include the most common complaints, namely dull skin in 399 patients, as well as the most precipitating factors discovered in 90 patients, namely exposure to sunlight and pollution. Wrinkles were the most common physical examination finding in 382 patients, with Glogau's photoaging III being the most common diagnosis in 168 patients. Most patients were treated with photoprotection in the form of sunscreen, with a total of 363 patients. With the increase of public awareness about health, quality of life, and appearance, particularly among women, skin aging is receiving adequate attention these days, with sun exposure being the most common precipitating factor in this study.

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