

Hair disorder in dr. Cipto Mangunkusumo cosmetic dermatology and venereology outpatient clinic of Jakarta, Indonesia: A socio-demographic and clinical evaluation

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Abstract

Hair disorder has a significant impact on sociopsychology. In Indonesia, there are currently few and out-of-date studies on hair disorders. Our study aimed to provide an update on the epidemiology of hair loss, which is common in Indonesia. This is a retrospective study of hair disorder cases seen at Dr. Cipto Mangunkusumo's Cosmetic Dermatology Outpatient Clinic at the National Central General Hospital from January 2017 to December 2019. Each patient's age, gender, family history, education, occupation, body mass index (BMI), comorbidities, and diagnosis were recorded. Hair disorders were found to be more prevalent in males (54.6 percent) with a mean age of 26.41 ± 12.8 years old and the highest age group of 18-39 years old (59.4 percent) among the 64 patients who were eligible for the study. There were 32 cases (50.0%) of alopecia areata (AA), 20 cases (31.2%) of alopecia androgenetic (AGA), 9 cases (14.0%) of telogen effluvium (TE), 2 cases of cicatricial alopecia (CA) due to lupus erythematosus (DLE), and 1 case of trichotillomania (TTM). Female patients had significantly more TE cases. Cases of AGA in the study, mainly early-onset AGA (mean age 29.45 ± 10.29 years old, 39.5% in 18-39 years old) showed a significant positive familial history. At dr Cipto Mangunkusumo National General Hospital Jakarta, the most common types of hair disorders were AA, AGA, and TE, with each disease having a unique socio-demographic and clinical profile.

Introduction

Hair disorder has a significant impact on a person's sociophysiological aspect, which is primarily attributed to hair's func-

tion in social interaction and psychology. The most common hair disorders, according to reports, are androgenetic alopecia (AGA) and alopecia areata (AA).^{1,2} Studies showed that AGA and AA patients had a significant decline in quality of life (QoL), which was linked to an increase in depression, anxiety, and psychological problems.³ Nonetheless, the currently available treatment is ineffective and also has problematic side effects.^{4,5}

Multicenter study with 2.835 participants, consisting of 72.7% women and 27.3% men found AGA (37.7%) as the most prevalent hair disorder, followed by AA (18,2%), and TE (11,3%).⁶ Incidence of AGA was found ranging between 50-70%,^{7,8} with an increase of prevalence from 45% in 49 years old to 70% in 79 years old.^{8,9} In addition, AGA was found lower in women.¹⁰ AA according to studies was found to have a prevalence between 0.2-1.7%. It was found higher in patients aged <40 years old (66%) compared to ≥ 40 years old (20%) with no gender predominance.¹¹ A previous study conducted in Indonesia assessing hair disorder within the period of 2009-2011 also found AGA (39.7%) to be the most prevalent hair disorder, followed by telogen effluvium (TE) (34.5%), and AA (11.2%). The majority of the patients were female with a mean age of 28 years old.¹² These studies showed the variation of common and uncommon causes of hair loss in different study settings.

Few studies on hair loss have been conducted in Indonesia, and previous studies are outdated and provide insufficient epidemiological and clinical profiles for diagnosis guidance. As a result, the purpose of this study was to provide an update on hair loss epidemiology in Indonesia.

Materials and methods

Study design and setting

This report is a retrospective analytical study conducted at the Cosmetic Dermatology Outpatient Clinic, Department of Dermatology and Venereology, dr. Cipto Mangunkusumo National Central General Hospital. The research was approved by the Research Ethics Committee of the Faculty of Medicine University of Indonesia – dr. Cipto Mangunkusumo National Central General Hospital.

Study population

Medical records from patients who visited the clinic between January 2017 and December 2019 were examined. All

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patients who were diagnosed with a hair disorder by dermatologists were included in the study. Incomplete information or clinical data in medical records, as well as inaccessible medical records were the exclusion criteria.

Data collection and assessment

Age, gender, duration, education, occupation, BMI, and comorbidities data were retrieved and analyzed. We diagnosed all

hair disorders in this study using anamnesis, physical examination, and additional diagnostic procedures such as dermoscopy and biopsy. Since 2017, all cases have been routinely examined with dermoscopy. However, prior to that year, several cases were not evaluated with dermoscopy. Biopsies were performed to diagnose cicatricial alopecia, and in some cases, the diagnosis was still unknown.

Analysis

Data entry and analysis were processed using the Statistical Package for the Social Sciences (SPSS) version 25. Categorical variables were expressed as a percentage, while continuous variables were demonstrated as mean \pm SD for data with normal distribution and median (interquartile range, IQR) for data with non-normal distribution. Chi-square test or Fisher's test were used to compare categorical variables. A p-value of <0.05 was considered statistically significant.

record, a total of 67 patients were diagnosed with hair disease within the study period. However, there were three patients were excluded due to incomplete medical records, leaving 64 patient cases eligible for the study. The study protocol is provided in Figure 1.

Demographic data

The sociodemographic characteristics of the patient were displayed in Table 1. Of all subjects, 35 (54.7%) patients were male and 29 (43.3%) patients were female. There were 32 cases (50.0%) of AA, 20 cases (31.2%) of AGA, 9 cases (14.0%) of TE, 2

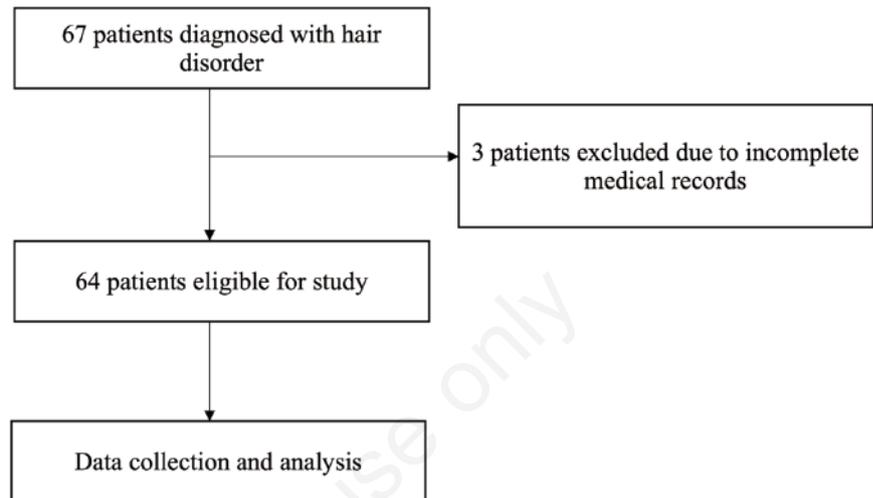


Figure 1. The study flow diagram.

Results

Based on the collection of the medical

Table 1. Sociodemographic characteristics of patient with hair disorder in Cosmetic Dermatology Outpatient Clinic of dr. Cipto Mangunkusumo Hospital Jakarta 2017-2019.

Sociodemographic characteristics	AA	AGA (n=32)	TE (n=20)	CA (n=9)	TTM (n=2)	Population (n=1)	p (n=64)
Age (years), mean \pm SD	23.91 \pm 14.23	29.45 \pm 10.29	25.44 \pm 10.67	28.00 \pm 11.31	51*	26.41 \pm 12.8	0.349
Male sex (%)	19 (59.4)	13 (65.0)	1(11,1)	2 (100)	0 (0)	35 (54.7)	<i>0.028</i>
Family history (%)	2 (6.3)	10 (50.0)	0 (0)	0 (0)	0 (0)	0 (0)	<i>0.001</i>
Education level (%)							0.123
Elementary school	8 (25)	1 (5)	0 (0)	0 (0)	0 (0)	9 (14.1)	
Junior high school	1 (3.1)	0 (0)	1 (11.1)	1 (50.0)	0 (0)	3 (4.7)	
Senior high school	13 (40.6)	6 (30)	4 (44.4)	0 (0)	1 (100)	24 (37.5)	
Bachelor's degree	6 (18.8)	10 (50)	3 (33.3)	1 (50.0)	0 (0)	20 (31.3)	
Master's degree	4 (12.5)	3 (15)	1 (11.1)	0 (0)	0 (0)	8 (12.5)	
Occupation (%)							0,070
Student	13 (40.6)	4 (20.0)	4 (44.4)	1 (50.0)	0 (0)	22 (34.4)	
Housewives	4 (12.5)	0 (0)	1 (11.1)	0 (0)	1 (100)	6 (9.4)	
Civil/army/police /private employee	13 (40.6)	14 (70.0)	3 (33.3)	1 (50.0)	0 (0)	31 (48.4)	
Unemployed	2 (6.3)	2 (10.0)	1 (11.1)	0 (0)	0 (0)	5 (7.8)	
BMI category (%)							0.258
Underweight	7 (21.9)	1 (5)	2 (22.2)	0 (0)	0 (0)	10 (15.6)	
Normal	17 (51.3)	13 (65)	3 (33.3)	1 (50.0)	1 (100)	35 (54.7)	
Overweight	4 (12.5)	6 (30)	2 (22.2)	1 (50.0)	0 (0)	13 (20.3)	
Obese	4 (12.5)	0 (0)	2 (33.3)	0 (0)	0 (0)	6 (9.4)	
Comorbidities (%)							0.741
Hypertension	1 (3.1)	1 (5)	0 (0)	0 (0)	0 (0)	2 (3.1)	
Diabetes mellitus	1 (3.1)	1 (5)	0 (0)	0 (0)	0 (0)	2 (3.1)	
Malignancy	0 (0)	0 (0)	1 (11.1)	0 (0)	0 (0)	1 (1.6)	
Anemia	1 (3.1)	0 (0)	1 (11.1)	0 (0)	0 (0)	2 (3.1)	
Autoimmune	3 (9.3)	0 (0)	0 (0)	0 (0)	0 (0)	3 (4.6)	
Chronic infection	4 (12.5)	2 (10)	2 (22.2)	0 (0)	0 (0)	8 (12.5)	
Asthma	2 (6.3)	0 (0)	0 (0)	0 (0)	0 (0)	2 (3.1)	

*Only consist of one patient in the group Statistically significant values are written in italics ($p<0.05$).

cases of cicatricial alopecia (CA) due to lupus erythematosus (DLE), and 1 trichotillomania (TTM). In AA, AGA, and other groups the patients were predominantly male, except for TE where it was predominantly female (88.9%). The mean age of patients was 26.41 ± 12.812 years old. Mean age between disease group was highest in other alopecia with 35.67 ± 15.5 years old. Based on familial history, 50% of AGA patients had familial history, while there was only a small proportion in AA (6.3%) or no familial history in TE, CA, and TTM. The patients were mainly senior high school graduates (37.5%) with civil/army/police/private employees as the most common occupation (48.4%). The patients mainly had normal BMI (54.7%). The most common comorbidities found was chronic infection (12.5%) followed by autoimmune (4.6%). Chronic infection and autoimmune were found the highest in AA patients.

Based on age and gender characteristics (Table 2), hair disorders in both female and male patients were highest in the 19-40-year-old group. In this study, there was no patient aged ≥ 65 years old based on medical record collection.

Frequency of alopecia by age group

Regarding age group (Table 3), the most prevalent hair disorder in ≤ 18 -year-old patients was AA (73%), followed by both AGA and TE (13.3%). Meanwhile, in 18-40-year-old patients, AA and AGA were found to be the most frequent (39.5% and 39.5%, respectively). In 41-64-year-old patients, AA (54.5%) was found to be the most common case. Cicatricial alopecia was found in the 18-40-year-old group, while trichotillomania in the 40-64-year-old group.

Frequency of alopecia by gender group

Based on gender (Table 4), hair disorders in male patients from the most common were AA (54.2%), followed by both AGA (37.1%) and TE (13.3%). In the female patients, the most prevalent was also AA (44.8%), followed by TE (24.1%) and AGA (24.1%). We observed cicatricial alopecia only in male patients and trichotillomania only in female patients.

Discussion

In our study, we discovered that the most common hair disorder was AA (50.0%), followed by AGA (31.2%), and TE (31.2%) (14.0%). Our study differed slightly from the previous study in that AGA was

the most common type of hair disorder compared to AA.^{6,13} According to the findings of this study, the majority of people seeking treatment for AGA had a bachelor's degree (50%) or a master's degree (15%). Meanwhile, the majority of patients seeking treatment in AA and TE were from lower socioeconomic classes. As a developing country, the majority of the population received lower-class education; data from the Central Bureau of Statistics revealed that only 19.32 percent of Indonesians will pursue undergraduate studies in 2020.¹⁴ Therefore, many patients might have not been aware of AGA and seen AGA as a normal aging process and is normally inherited thus not seeking for treatment. Study findings implied that patients with better perception and understanding of AGA were more willing to pursue treatment. This also emphasized the importance of education relating to hair disorders to increase public

awareness of AGA.¹⁵ Meanwhile, AA encompassed all age groups, sexes, and ethnicities. Nonetheless, AA had unpredictable nature with clinical variation ranging from small, well-circumscribed patches to severe condition of hair loss, complete absence of body and scalp hair.¹⁶ This may lead to frustration hence the pursue for treatment were higher.

Hair disorder in our study was more prevalent in the male group (54.6%) with a mean age of 26.41 ± 12.8 years old and mostly found in the 19-40-year-old age group (59.4%). A previous study stated that hair disorder, which mainly consisted of AGA, AA, and TE, was commonly found in patient with mean age ranging from 28-45 years old based on each disorder group.⁶

The most common case in our study, AA, presented with a mean age of 23.91 ± 14.23 years old and was predominant in males (59.4%). Based on the age

Table 2. Distribution of gender based on age group of patients with hair disorder in Cosmetic Dermatology Outpatient Clinic of dr. Cipto Mangunkusumo Hospital Jakarta 2017-2019.

Age Group	Female (%)	Male (%)	Total (%)
<18 years	9 (14.1)	6 (9.3)	15 (23.4)
19-40 years	13 (20.3)	25 (39)	38 (59.4)
40-64 years	7 (10.9)	4 (6.3)	11 (17.2)
Total	29 (45.3)	35 (54.6)	64 (100)

Table 3. Distribution of hair disorder based on the age group of patients with hair disorder in Cosmetic Dermatology Outpatient Clinic of dr. Cipto Mangunkusumo Hospital Jakarta 2017-2019.

Disease	<18 years old N (%)	18-40 years old N (%)	40-64 years old N (%)	p
Alopecia areata	11 (73.3)	15 (39.5)	6 (54.5)	0.080
Alopecia androgenetic	2 (13.3)	15 (39.5)	3 (27.2)	0.172
Telogen effluvium	2 (13.3)	6 (15.8)	1 (9.1)	0.850
Cicatricial alopecia	0	2 (5.2)	0	1.000
Trichotillomania	0	0	1 (9.1)	0.172
Total	15	38	11	

Table 4. Distribution of hair disorder based on gender of patients with hair disorder in Cosmetic Dermatology Outpatient Clinic of dr. Cipto Mangunkusumo Hospital Jakarta 2017-2019.

Disease	Male N (%)	Female N (%)	p
Alopecia areata	19 (54.2)	13 (44.8)	0.451
Alopecia androgenetic	13 (37.1)	7 (24.1)	0.264
Telogen effluvium	1 (2.8)	8 (27.5)	0.008*
Cicatricial alopecia	2 (5.6)	0	0.497
Trichotillomania	0	1 (3.4)	0.453
Total	35 (100)	29 (100)	

*Statistically significant values in bold ($p < 0.05$).

group, AA was highest in ≤ 18 years-old group. An epidemiological review of AA by Lee *et al.*¹⁷ found the prevalence of AA higher in children/adolescents (1.83% [1.21-2.58%; 30 groups] compared to adults (1.64% [1.30-2.03%; 24 groups]). It was stated that AA affected both male and female equally. Our study matched Lee *et al.*¹⁷ study that found prevalence in males (3.42% \pm 2.70-4.23%) to be higher compared to females (1.25 \pm 1.05-1.47%), albeit another study by Vaño-Galván *et al.*⁶ found a higher percentage in female (64%) compared to male (36%).

In our study, we found autoimmune was highest in AA (9.3%), with 2 patients having systemic lupus erythematosus (SLE) and 1 patient having vitiligo. Based on previous studies, AA was found to increase in patients with SLE, vitiligo, and psoriasis.¹⁷ Chronic infection was also found highest in AA (12.5%). It had been suggested that infection of Epstein Barr Virus (EBV) and Cytomegalovirus (CMV) may serve as AA environmental triggers.¹⁸ In our study, 3 patients had a history of HIV and 1 patient had tuberculosis. The case of AA and HIV infection was rare but reported by Xuan *et al.*¹⁹ in 2014. In this report, it was theorized that AA and vitiligo found in the patient were due to the generation and maintenance of self-reactive CD8+ in HIV chronic infection. As for tuberculosis, there had not been a reported link to AA.

The mean age of AGA in our study was 29.45 \pm 10.29 years old. Usually, AGA manifests in between 30–40 years old, although current studies state that it is possible to occur early after puberty.²⁰ Previous study mentioned increased prevalence of AGA from 45% in 49 years old to 70% in 79 years old which was not found in our study (no patients in the >64 years old group).^{9,10} AGA defined as early onset manifestation if occurred in ≤ 35 years old.²¹ Several factors had been associated with early manifestation, including BMI > 25 kg/m², cardiovascular diseases, metabolic disorder, insulin resistance, and AGA familial pattern.²² In our study, there was a significant difference of familial history in AGA patient (50%) compared to other hair disorders. Although androgenetic alopecia is already known as a hereditary disease with polygenic traits, the precise pattern of inheritance has not yet been discovered. A prior epidemiological study in Korea regarding AGA patient revealed in both male and female patients respectively 64.1% and 49.4% possessed family history of AGA.²³ Another study in China, focusing in early-onset AGA, found 72.8% of patients had familial history.²¹

The predominance of male gender (65%) in our study was also consistent with

previous studies.⁶ Based on current prevalence data, approximately 30% of Caucasian men will suffer from AGA at the age of 30 years, and it will increase up to 50% by 50 years, and 80% by 70 years.²⁴ In this study, 35% of AGA patients were female. However, it should be remarked that several diagnoses of AGA in female patients had been made without dermoscopy evaluation and several cases were loss to follow-up.

AGA was previously linked to obesity. This suggestion was based on a reported negative association between relative weight and testosterone. Despite clinical study had not found an association between AGA and current weight, it was found that weight at the end of the pubertal stage had a negative correlation with the presence of AGA at age 50–69 years.²⁵ In our study, we found 30% of AGA patients were overweight.

The third highest case, TE, was presented in the mean age of 25.44 \pm 10.67 years old and significantly higher in females (88.9%) ($p=0.008$). Telogen effluvium was reported in previous studies with higher prevalence in female. Our study was also consistent with previous studies in which the peak prevalence of TE was in the 19–40-year-old age group. The study by Fatani *et al.*²⁶ mentioned the peak TE incidence (58.5%) was in the 21–40 age group.

Conclusions

At dr. Cipto Mangunkusumo National Central Hospital Jakarta, the most common type of hair disorder evaluated was AA, followed by AGA and TE. The patients in AGA and AA were mostly male, with a female predominance in TE. In AGA patients, there was a significant familial history factor. A total of three different hair disorder diagnoses (AA, AGA, and TE) were established, each with a different socio-demographic profile, emphasizing the importance of socio-demographic assessment in patients with hair disorder.

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