

The psychosocial burden of androgenetic alopecia in Saudi Arabia: A cross-sectional study

Mohammed A. Almashali¹, Manar A. Alotaibi², Alanoud H. Alkhanani³,
Norah M. Al Dera⁴, Muhannad M. Alwadany⁵, Abdulelah S. Almousa⁶,
Asem M. Shadid⁷

¹Department of Dermatology, College of Medicine, Imam Mohammad Ibn Saud Islamic University, Riyadh, Saudi Arabia, ²Department of Dermatology, Prince Sultan Military Medical City, Riyadh, Saudi Arabia, ³Department of Medicine, Imam Mohammad Ibn Saud Islamic University, Riyadh, Saudi Arabia, ⁴Department of Dermatology, Imam Mohammad Ibn Saud Islamic University, Riyadh, Saudi Arabia, ⁵Department of Dermatology, Medical Collage, King Faisal University, Al Hufuf, Saudi Arabia, ⁶Department of Dermatology, King Faisal University, Al Hofuf, Saudi Arabia, ⁷Department of Dermatology, King Fahad Medical City, Riyadh, Saudi Arabia

ABSTRACT

Background: The most prevalent cause of hair loss is androgenetic alopecia. Improved therapeutic modalities may result from knowing how stress affects hair growth, incorporating stress-coping methods into the treatment of hair loss disorders, and developing new pharmacotherapeutic approaches. This study aimed to examine the psychosocial burden of androgenetic alopecia in Saudi Arabia. **Materials and Methods:** A cross-sectional online survey study was conducted among patients with androgenetic alopecia in Saudi Arabia in February 2023. A previously developed questionnaire was adapted from a previously published tool and used in this study. This association between patients' characteristics and the level of psychosocial disease was identified using binary logistic regression analysis. **Results:** This study included 1230 patients. The majority of the patients (78.0%) reported that they felt embarrassed by their androgenetic alopecia. The median score of the psychosocial impact of androgenetic alopecia on the patients was 1.00 (0.00–2.00), which is equal to 10.0%, reflecting a low level of psychosocial burden on the patients by their condition. Binary logistic regression analysis identified that patients without a family history of androgenetic alopecia were 36.0% less likely to be affected psychosocially by their condition ($P < 0.01$). **Conclusions:** A low-level psychosocial effect was seen in our study among individuals with androgenetic alopecia. Further research should be done to determine how the type of alopecia affects patients' psychological results, as well as the influence of the disease's duration on those outcomes. Dermatologists are recommended to raise patients' knowledge of their disease and lessen stigmatization in the meantime.

Keywords: Androgenetic alopecia, psychosocial, Saudi Arabia

Introduction

The most prevalent cause of hair loss is androgenetic alopecia (AGA), followed by alopecia areata (AA).^[1] Males are more susceptible than females to hair loss, which typically begins after puberty. Over the span of their lifetime, up to 80% of men and 50% of women may be affected.^[2] AGA, as the name suggests, has a distinct genetic predisposition

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

How to cite this article: Almashali MA, Alotaibi MA, Alkhanani AH, Al Dera NM, Alwadany MM, Almousa AS, *et al.* The psychosocial burden of androgenetic alopecia in Saudi Arabia: A cross-sectional study. *J Family Med Prim Care* 2023;12:3374-9.

Address for correspondence: Dr. Manar A. Alotaibi,
Department of Dermatology, Prince Sultan Military Medical
City, P.O. Box: 7047, Riyadh - 13244-3442, Saudi Arabia.
E-mail: manaraotaibi@gmail.com

Received: 14-07-2023

Revised: 03-09-2023

Accepted: 08-09-2023

Published: 21-12-2023

Access this article online

Quick Response Code:



Website:
<http://journals.lww.com/JFMPC>

DOI:
10.4103/jfmpe.jfmpe_1151_23

and is likely caused by an excessive response to androgen. Dehydrotestosterone (DHT), a testosterone metabolite, causes hair miniaturization by affecting androgen-sensitive hair follicles. AGA induces generalized crown thinning in women, while the frontal hairline remains unaffected. In premenopausal females, hirsutism, AGA, and acne can be symptoms of hyperandrogenism. Bitemporal recession of the frontal hairline and widespread vertex thinning define the masculine pattern.^[3] The epidemiology of AGA has been extensively studied. It is known that the prevalence of AGA varies by ethnicity and gender, affecting between 0.2% and 2% of the world's population on average. In addition, the incidence rate and severity of AGA increase with age for both genders and all races.^[4] Although testosterone appears to have an effect independent of genetic predisposition, it is believed that polygenic inheritance is the underlying cause. Through a process mediated by the enzyme 5- α reductase, testosterone is converted into the biologically more active metabolite dihydrotestosterone in hair follicle cells. This hormone's unique interaction with androgenetic receptors in the hair follicle induces cellular reactions that abbreviate the anagen phase of the hair cycle. This causes the hair to enter the telogen phase and fall out faster. Age-related factors are also important in AGA; the onset of symptoms typically occurs in the third decade of life. There are unquestionably additional factors at play.^[5] It can be one of the most difficult conditions to treat due to the fact that deciding on a course of action frequently requires balancing multiple complex facts and making moral judgments. Considering the chronic nature of AGA,^[6] the most important factors to consider are efficacy, adverse effect profiles, practicability, encouraging compliance, and treatment cost. The expression "poor hair day" demonstrates the psychological significance of hair. For a person who is losing their hair, every day may be "poor hair day." A patient with hair loss experiences a variety of sentiments and emotions due to social and personal pressures. Hair loss may result in psychological tension. In movies, television, newspapers, and social media, hair treatments and camouflage methods are heavily advertised, which exacerbates the problem.^[7] Hair loss causes more anxiety and grief than its apparent severity would suggest.^[8] It is believed that stress is one of the primary causes of hair loss. *In vivo* research on mice has confirmed that stress can have significant hair-damaging, catagen-inducing, and proinflammatory effects. Understanding how stress affects hair growth, incorporating stress-coping techniques into the treatment of hair loss disorders, and developing new pharmacotherapeutic approaches could all lead to improved therapeutic modalities that alleviate both clinical symptoms and the accompanying psychological effects.^[8] Moreover, studies have demonstrated that hair loss can lead to a variety of psychological issues, such as anxiety, depression, and trauma, and further diminish quality of life.^[9] Therefore, the purpose of this study was to examine the psychosocial burden of AGA in Saudi Arabia. To effectively help patients and enhance their holistic health, medical practitioners must acknowledge and attend to the psychological ramifications of alopecia within their therapeutic strategies.^[10]

Materials and Methods

This is a cross-sectional study that was conducted on patients with AGA in Saudi Arabia. This study took place in February 2023. An online self-administered questionnaire was used to collect the data for this study. The questionnaire tool contained a number of closed-ended questions that were guided by the study objective and a review of the literature to assess the psychosocial burden related to AGA. Ethical approval was obtained from the Institutional Review Board (IRB) (No. 441/2023, dated February 22, 2023), and informed written consent was obtained from all participants in the study.

The inclusion criteria for this study were: 1) patients diagnosed with AGA, 2) aged 18 years and above, and 3) currently living in Saudi Arabia. The consent to participate in the study was included in the questionnaire cover letter, with an explanation of the above-mentioned inclusion criteria. The study participants were invited through social media websites (Facebook, Snap Chat, and WhatsApp) to participate in the study using convenience sampling technique.

A previously developed questionnaire tool was adapted from a previously published tool and used in this study.^[11] There were 24 questions in the questionnaire, divided into two sections. The first section focused on the demographic characteristics of the study population: age at onset, history of the disease, use of special hair treatments and skin care products, and past dermatological treatments. The second section was set to study the link between AGA and the self-esteem of patients at work, their ability to function on a daily basis, their social life, and their relationship with friends and family. For each question, any participant who confirmed the statement by choosing the answers "Always, Often, To a great extent, Frequently, or Yes" was given a score of one for each item. The maximum attainable score was 10; the higher the score, the higher the psychosocial impact of AGA on the patient. Participation was voluntary, and written informed consent was obtained before the study. The study was carried out as per the code of ethics of the Declaration of Helsinki for humans. Approval was obtained in advance from the Institutional Review Board of Al-Imam Mohammad Ibn Saud Islamic University in Riyadh, Kingdom of Saudi Arabia (project number: 441/2023).

For statistical analysis, data were analyzed using the Statistical Package for Social Sciences software, version 27. Continuous variables were displayed using the median (interquartile range) as the data were not normally distributed, while categorical variables were displayed using frequency and percentages. This association between patients' characteristics and the level of psychosocial disease was identified using binary logistic regression analysis. The dummy variable for the logistic regression analysis was defined as a median score of 1.00 or above. With a significance level of 5%, a 95% confidence interval ($P \leq 0.05$) was applied to indicate the statistical significance.

Results

A total of 1230 patients participated in this study. Females contributed more than half of the study sample (72.8%). The vast majority of the patients lived in urban areas. More than half of the patients (63.1%) reported that they had a bachelor's degree. Table 1 presents the demographic characteristics of the study sample.

Table 2 presents the characteristics of alopecia among the study participants and its associated history. More than 75.0% of the study participants reported that the first signs of alopecia appeared before the age of 30. Almost half of the study sample (52.4%) reported that they had high-density hair before the development of AGA. A total of 44.4% of the study participants reported that they have a family history of AGA.

Table 3 presents the psychosocial burden of AGA among the study participants. Around 82.0% of the patients reported that they experienced itching, tingling, and a sore scalp. The vast majority of the patients (95.0%) reported being exposed to stress in their everyday lives. The majority of the patients (78.0%) reported that they felt embarrassed by their AGA.

Table 1: Participants' demographic characteristics

Variable	Frequency	Percentage
Gender		
Females	895	72.8
Area of residency		
Urban	1164	94.6
Rural	66	5.4
Education level		
Secondary school or lower	299	24.3
Diploma	57	4.6
Bachelor's degree	776	63.1
Higher education	98	8.0

Table 2: Alopecia profile among the study participants

Variable	Frequency	Percentage
“When did you notice the first signs of alopecia?”		
Before 20 years of age	466	37.9
20–30 years	471	38.3
31–40 years	160	13.0
41–50 years	92	7.5
Over 50 years	41	3.3
“What was your hair density before androgenetic alopecia?”		
High	645	52.4
Low	312	25.4
Hard to say	272	22.1
“Did you notice androgenetic alopecia in other members of your family?”		
Yes	546	44.4
No	385	31.3
I don't know	300	24.4

Around 70.0%, 75.0%, and 75% of the patients reported that they felt discomfort caused by excessive hair loss in the presence of their family, friends, and strangers, respectively. A total of 65.0% of the patients reported that alopecia affected the way they dressed. Around 37.0% of the patients reported that alopecia prevented them from practicing sports in public places or at gyms. Around 65.0% and 55.0% of the patients reported that excessive hair loss and jokes about baldness affected their self-esteem, respectively. Almost half of the study sample (52.0%) reported that alopecia made it difficult for them to perform everyday activities. The vast majority of the patients (85.0%) reported that they thought of alopecia.

More than half of the study participants (65.0%) reported that they have used products or supplements to strengthen their hair or prevent hair loss, and 33.0% reported that they have undergone treatments to prevent excessive hair loss. Almost one-quarter (23.1%) of the study participants reported that they think people suffering from AGA are less attractive.

The median score of the psychosocial impact of AGA on the patients was 1.00 (0.00–2.00), which is equal to 10.0%, reflecting a low level of psychosocial burden on the patients due to their health condition. Patients without a family history of AGA were 36.0% less likely to be affected psychosocially due to their condition ($P < 0.01$) [Table 4].

Discussion

Psychodermatology is divided into three groups based on how skin ailments and mental health issues are connected: 1) psychophysiological disorders brought on by skin conditions that cause various emotional states (stress); 2) psychophysiological disorders caused by skin conditions that cause disfiguring skin (ichthyosis, acne conglobata, and vitiligo); and 3) secondary psychiatric disorders brought on by disfiguring skin that can cause states of depression, fear, or suicidal thoughts.^[12]

The key findings of this study are: 1) the majority of the study participants reported that the first signs of alopecia appeared before the age of 30; 2) almost half of the study sample reported that alopecia makes it difficult for them to perform everyday activities; 3) more than half of the study participants reported that they have used products or supplements to strengthen their hair or prevent hair loss; 4) low level of psychosocial burden on the patients due to their health condition was observed among patients with AGA; and 5) patients without a family history of AGA were less likely to be affected psychosocially due to their condition.

Research on the psychological impacts of alopecia was done by Hunt N. and McHale S. They made the argument that the cause and progression of alopecia are not fully known, and that the disorder is neither painful nor life threatening. Alopecia patients are more likely than the overall population to develop mental illnesses, which suggests that they may also be more prone to

Table 3: Psychosocial burden of androgenetic alopecia

Variable	Frequency	Percentage		
“How often do you experience itching, tingling, and sore scalp?”				
Often	155	12.6		
Sometimes	443	36.0		
Never	225	18.3		
Rarely	292	23.7		
Always	116	9.4		
“How often are you exposed to stress in your everyday life?”				
Always	235	19.1		
Often	373	30.3		
Sometimes	411	33.4		
Rarely	144	11.7		
Never	68	5.5		
“How often do you feel embarrassed by your androgenetic alopecia?” [§]				
Always	144	11.7		
Often	207	16.8		
Sometimes	357	29.0		
Rarely	246	20.0		
Never	278	22.6		
	To a great extent	Somewhat yes	Very little	Not at all
“Do you feel any discomfort caused by excessive hair loss in the presence of your family?” [§]	10.6	27.2	31.6	30.6
“Do you feel any discomfort caused by excessive hair loss in the presence of friends?” [§]	17.1	30.3	27.8	24.7
“Do you feel any discomfort caused by excessive hair loss in the presence of strangers?” [§]	20.5	29.4	25.6	24.6
“Does alopecia affect the way you dress?” [§]	11.9	25.1	28.4	34.6
“Does alopecia prevent you from practicing sports in public places or at gyms?” [§]	6.7	14.4	15.5	63.5
“Does excessive hair loss affect your self-esteem?” [§]	10.7	22.0	31.0	36.3
“Do jokes about baldness affect your self-esteem?” [§]	9.2	21.8	23.4	45.7
	Frequently	Occasionally	Rarely	Never
“How often does alopecia make it difficult for you to perform everyday activities (work, shopping, etc.)?” [§]	6.3	18.9	26.0	48.8
		Occasionally	Rarely	Never
“How often do you think about your alopecia?”		53.0	32.6	14.4
	Frequency	Percentage		
“Have you used any products or supplements to strengthen your hair or prevent hair loss?” (Yes)	800	65.0		
“Have you undergone any treatments to prevent excessive hair loss?” (Yes)	403	32.8		
“In your opinion, are people suffering from androgenetic alopecia less attractive?” [§] (Yes)	284	23.1		

[§]Questions were used to examine the psychosocial impact

serious depressive episodes, anxiety disorders, social phobias, and paranoid disorders. The overwhelming body of data indicates that alopecia sufferers have greater levels of anxiety and despair than controls. In addition, they experience poor quality of life, low self-esteem, and unfavorable body perception.^[13]

In our study, a total of 44.4% of the study participants reported that they have a family history of AGA. This was in line with the findings of a previous study in Saudi Arabia, which reported that 46% of patients with alopecia reported having a family history.^[14] In our study, the majority of the patients (78.0%) reported that they felt embarrassed by their AGA. According to a previous study, a person's physical, emotional, social, and psychological conditions are negatively impacted by visible hair loss to a modest extent. In addition, maybe more crucially, AGA is commonly

regarded as a moderately stressful illness that makes people feel less satisfied with their appearance.^[15]

In our study, there was a low level of psychosocial burden on the patients due to their health conditions. Patients without a family history of AGA were 36.0% less likely to be affected psychosocially due to their condition ($P < 0.01$). A previous study in China looked at the quality of life of people with AA and AGA and noticed that a higher Dermatology Life Quality Index (DLQI) score was significantly correlated with the younger age of alopecia patients. The study also found that sex, education, marital status, past history of alopecia, family history of alopecia, and severity of alopecia had no impact on the quality of life.^[16] Another study in India examined the psychosocial aspects and found that the psychosocial burden was higher

Table 4: Predictors of being affected psychosocially by androgenetic alopecia

Variable	Odds ratio of being psychosocially affected (95% confidence interval)	P
Gender		
Females (reference category)	1.00	
Males	0.81 (0.59–1.11)	0.193
Area of residency		
Urban (reference category)	1.00	
Rural	0.92 (0.49–1.71)	0.781
Education level		
Secondary school or lower (reference category)	1.00	
Diploma	1.02 (0.51–2.01)	0.966
Bachelor's degree	1.06 (0.79–1.43)	0.685
Higher education	1.21 (0.70–2.08)	0.493
“When did you notice the first signs of alopecia?”		
Before 20 years of age (reference category)	1.00	
20–30 years	1.10 (0.82–1.48)	0.513
31–40 years	0.82 (0.54–1.24)	0.348
41–50 years	1.19 (0.68–2.08)	0.542
Over 50 years	0.78 (0.36–1.68)	0.522
“What was your hair density before androgenetic alopecia?”		
High (reference category)	1.00	
Low	0.92 (0.66–1.28)	0.617
Hard to say	1.08 (0.77–1.53)	0.649
“Did you notice androgenetic alopecia in other members of your family?”		
Yes (reference category)	1.00	
No	0.64 (0.48–0.86)	0.003

among the younger population in an urban setting.^[15] Another study in Saudi Arabia examined the prevalence of alopecia and its predictors and reported that 50% of people with hair loss experienced stressful events such as divorce, occupational difficulties, or events related to loved ones.^[12] Another study in China that examined the quality of life of patients with AGA reported that women have worsened quality of life in terms of symptoms and men have worsened quality of life in terms of stigmatization due to their condition.^[17,18] Confirming our study findings, the study concluded that patients with a positive family history had higher self-confidence and better awareness of the disease, and thus their quality of life was less affected.^[17]

In our study, more than half of the study participants (65.0%) reported that they have used products or supplements to strengthen their hair or prevent hair loss and 33.0% reported that they have undergone treatments to prevent excessive hair loss. AGA patients may be provided with a wide range of therapeutic options, such as topical and hormonal therapy using oral finasteride and topical minoxidil solution, both of which have high-quality data among male patients.^[19] Depending on the clinical parameters of the patient, oral finasteride's efficacy might range from 32% to 80%.^[20,21] The outcomes of the short-term treatment are superior to those of the long-term treatment.^[22] Systemic finasteride is thought to be less efficacious than topical minoxidil.^[20] There are also unapproved antihormonal therapies that may be applied topically or taken orally, although the evidence for them is weak. For patients who have tried alternative therapies without success, surgery may be a possibility. However, the effectiveness of hair

transplants is still being studied and requires assistance from hormone therapy. Patients may also think about laser therapy.^[23]

The degree of depression and the risk of suicide are not always correlated with the clinical severity of the dermatological condition. The care of a variety of dermatologic illnesses, as well as some elements of secondary and tertiary prevention, requires taking psychological and psychosocial components into account. A biopsychosocial model can be used to manage the patient in addition to the primary dermatologic factors because it takes into account psychological, social, and occupational factors as well as psychiatric comorbidities like major depression and the impact of the skin disorder on the psychological aspects of quality of life. Some dermatology patients may benefit from psychotherapy therapies and psychotropic drugs for the management of their psychosocial comorbidity, in addition to the standard dermatologic treatments for their skin disease.^[24]

The examination of the psychosocial impact of AGA holds significant relevance within the realm of primary care physicians for multiple reasons.^[10,11,25] The condition known as AGA has the potential to exert a substantial influence on an individual's self-esteem and overall psychological state. The mitigation of the psychosocial load associated with AGA has the potential to enhance the patient–physician interaction. Physicians can enhance their comprehensive evaluation of a patient's health by incorporating an appreciation for the psychosocial dimensions, thereby acknowledging the significance of both physical and emotional factors. In certain instances, individuals may actively

pursue unregulated or potentially hazardous interventions for the purpose of addressing hair loss, driven by the psychological anguish it engenders. Primary care physicians have the potential to mitigate the emotional load experienced by patients and enhance their decision-making process by offering evidence-based information. This approach can effectively minimize the likelihood of consequences arising from the utilization of unproven treatments.

The main limitation of this study was the use of non-convenience sampling technique, which might have affected the generalizability of our findings. Another limitation is the self-administered nature of our study design and the possibility of misdiagnosis.

Conclusion

In our study, there was a low level of psychosocial impact among patients with AGA. Further studies are warranted to be conducted to examine the impact of disease duration on patients' psychological outcomes and the role of the type of alopecia on patients' psychological outcomes.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

- Vañó-Galván S, Saceda-Corralo D, Blume-Peytavi U, Cucchia J, Dlova NC, Gavazzoni Dias MFR, *et al.* Frequency of the types of alopecia at twenty-two specialist hair clinics: A multicenter study. *Skin Appendage Disord* 2019;5:309-15.
- Aukerman EL, Jafferany M. The psychological consequences of androgenetic alopecia: A systematic review. *J Cosmet Dermatol* 2023;22:89-95.
- Piraccini BM, Alessandrini A. Androgenetic alopecia. *G Ital Dermatol Venereol* 2014;149:15-24.
- Yeo IK, Jang WS, Min PK, Cho HR, Cho SW, Hong NS, *et al.* An epidemiological study of androgenic alopecia in 3114 Korean patients. *Clin Exp Dermatol* 2014;39:25-9.
- Bienová M, Kucerová R, Fiurásková M, Hajdúch M, Kolár Z. Androgenetic alopecia and current methods of treatment. *Acta Dermatovenerol Alp Pannonica Adriat* 2005;14:5-8.
- Nestor MS, Ablon G, Gade A, Han H, Fischer DL. Treatment options for androgenetic alopecia: Efficacy, side effects, compliance, financial considerations, and ethics. *J Cosmet Dermatol* 2021;20:3759-81.
- Dhami L. Psychology of hair loss patients and importance of counseling. *Indian J Plast Surg* 2021;54:411-5.
- Hadshiew IM, Foitzik K, Arck PC, Paus R. Burden of hair loss: Stress and the underestimated psychosocial impact of telogen effluvium and androgenetic alopecia. *J Invest Dermatol* 2004;123:455-7.
- Choudhury CR, Bandopadhyay A, Mandal P. Psychosocial implications of hair loss following chemotherapy intervening with completion of adjuvant therapy for breast cancer. *J Med Sci Clin Res* 2018;6:850-8.
- Maloh J, Engel T, Natarelli N, Nong Y, Zufall A, Sivamani RK. Systematic review of psychological interventions for quality of life, mental health, and hair growth in alopecia areata and scarring alopecia. *J Clin Med* 2023;12:964.
- Adamowicz R, Załęcki P, Dukiel A, Nowicka D. Association between androgenetic alopecia and psychosocial disease burden: A cross-sectional survey among Polish men. *Dermatol Res Pract* 2022;2022:1845044.
- Kieć-Swierczyńska M, Dudek B, Krecisz B, Swierczyńska-Machura D, Dudek W, Garnczarek A, *et al.* [The role of psychological factors and psychiatric disorders in skin diseases]. *Med Pr* 2006;57:551-5.
- Hunt N, McHale S. The psychological impact of alopecia. *BMJ* 2005;331:951-3.
- Alomash AR, Gosadi IM, Dallak FH, Durayb AA, Dallak AH, Hakami JA, *et al.* Prevalence of alopecia and its contributing factors among primary healthcare attendees in the Jazan region, Saudi Arabia. *J Family Med Prim Care* 2021;10:3851-6.
- Gupta S, Goyal I, Mahendra A. Quality of life assessment in patients with androgenetic alopecia. *Int J Trichology* 2019;11:147-52.
- Zhang M, Zhang N. Quality of life assessment in patients with alopecia areata and androgenetic alopecia in the People's Republic of China. *Patient Prefer Adherence* 2017;11:151-5.
- Moorthy S, Yu L, Peng L, Shen L, Han Y, Zhang Z, *et al.* Quality of life and its association with androgenetic alopecia patients in Shanghai: A cross-sectional study. *Clin Cosmet Investig Dermatol* 2022;15:2883-93.
- Gaber MA, Doma HE. The psychosocial effect of androgenetic alopecia in males and females. *Menoufia Medical Journal*. 2021;34:87-92. doi: 10.4103/mmj.mmj_268_19.
- Varothai S, Bergfeld WF. Androgenetic alopecia: An evidence-based treatment update. *Am J Clin Dermatol* 2014;15:217-30.
- Arca E, Açıkgöz G, Taştan HB, Köse O, Kurumlu Z. An open, randomized, comparative study of oral finasteride and 5% topical minoxidil in male androgenetic alopecia. *Dermatology* 2004;209:117-25.
- Inadomi T. Efficacy of finasteride for treating patients with androgenetic alopecia who are pileous in other areas: A pilot study in Japan. *Indian J Dermatol* 2014;59:163-5.
- Mella JM, Perret MC, Manzotti M, Catalano HN, Guyatt G. Efficacy and safety of finasteride therapy for androgenetic alopecia: A systematic review. *Arch Dermatol* 2010;146:1141-50.
- Adil A, Godwin M. The effectiveness of treatments for androgenetic alopecia: A systematic review and meta-analysis. *J Am Acad Dermatol* 2017;77:136-41.
- Gupta MA, Gupta AK. Psychiatric and psychological co-morbidity in patients with dermatologic disorders: Epidemiology and management. *Am J Clin Dermatol* 2003;4:833-42.
- Jankowski GS, Kranz D. AGA practitioner challenges: A mixed-methods pilot survey. *J Cosmet Dermatol* 2023:1-8.