Original Article

Prevalence of alopecia and its contributing factors among primary healthcare attendees in the Jazan region, Saudi Arabia

Abeer R. Alomaish[1], Ibrahim M. Gosadi[2], Fatimah H. Dallak[1], Amjad A. Durayb[1], Ali H. Dallak[3], Jubran A. Hakami[1], Ayman M. Hakami[1], Arar E. Alshamakhy[4], Nouf T. Mleeh[5]

[1]Faculty of Medicine, Jazan University, Jazan, [2]Department of Family and Community Medicine, Faculty of Medicine, Jazan University, Jazan, [3]Intensive Care Unit, Aseer Central Hospital, Aseer, [4]Department of Dermatology, Prince Muhammad Bin Nassir Hospital, Jazan, [5]Department of Dermatology, Faculty of Medicine, King Abdul-Aziz University, Jeddah, Saudi Arabia

ABSTRACT

Background: Alopecia is a common health condition that can be associated with social and psychological consequences. **Aims:** This study aims to estimate the prevalence of hair loss and its associated risk factors among primary healthcare center (PHC) attendees in the Jazan region. **Methods:** This investigation was a cross-sectional study conducted in the Jazan region of southwest Saudi Arabia. A total of 23 PHCs were randomly selected from five governorates in the region. Data were collected via interviewing PHCs attendees and were asked about their demographic characteristics, presence of hair loss, and among attendees who confirmed having hair loss, they were further asked about associated clinical features, healthcare-seeking behavior, and factors that might contribute to the development of their condition. **Results:** A total of 729 participants consented to be involved in this study. The number of respondents who reported having hair loss was 483, representing 66.3% of the whole sample. Gender appears to have the highest level of variability, with the majority of participants reporting hair loss being female ($P < 0.001$). The most frequently reported type of hair loss was telogen effluvium, followed by androgenic alopecia. A total of 185 respondents reported taking medications to treat their hair loss, of whom 108 (58.3%) did not seek any medical advice to identify the cause of their condition. **Limitations:** The main weakness of this investigation is related to relying on a reported presence of hair loss without having it confirmed with a clinical diagnosis. **Conclusion:** A minority of participants who reported suffering from hair loss were further evaluated by healthcare professionals to learn the cause of their hair loss. This may indicate the presence of poor hair care and the probability of a higher risk of hair loss requiring the development of suitable preventive strategies.

Keywords: Alopecia, Jazan, prevalence, Saudi Arabia

Introduction

Alopecia is hair loss that is not limited to the scalp and can occur on any part of the body.[1] It is classified into two main groups, scarring and nonscarring, with the latter being the most common.[1] Two percent of the world's population is reported to suffer from alopecia.[2] Alopecia can be associated with low self-esteem, low occupational performance, social withdrawal, and reduced quality of life.[3–5] Furthermore, several studies have indicated that hair loss can be associated with psychiatric disorders, such as anxiety, depression, substance abuse, and suicide.[6-8]

Access this article online

Quick Response Code:

Website:
www.jfmpc.com

DOI:
10.4103/jfmpc.jfmpc_1070_21

How to cite this article: Alomaish 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.

Multiple studies have investigated the prevalence and distribution of certain types of alopecia in Saudi Arabia. In a retrospective investigation of 9,317 dermatology clinics' medical records from a tertiary healthcare center in Riyadh, 216 patients were diagnosed with alopecia areata (AA) between 2016 and 2017, of whom 57.0% were male.[9] Similarly, a hospital-based investigation that reviewed the medical records of patients attending dermatology clinics in a tertiary healthcare center in Jeddah city was able to identify 83 patients diagnosed with AA between 2017 and 2018, of whom 54.2% were male.[10] In another retrospective review of medical records in a secondary healthcare center in Makkah that targeted only female patients, 279 were diagnosed with AA out of a total of 16,014 records.[11]

Reviewing the literature identifies multiple estimates in the prevalence of AA, dependent on the methodology utilized. From a larger, national scale perspective, an online investigation conducted via Al-ajlan *et al.*[12] recruited 5,362 respondents from different regions in the country, of whom 741 (13.8%) were classified as having AA. Another questionnaire-based investigation completed by 1,600 patients during visits to a dermatology clinic in Taif city found the prevalence of AA to be 6.5% among the respondents.[13] This demonstrates the variability in estimates of the prevalence of AA due to location and methodologies used; however, it remains clear that studies measuring the prevalence of all types of alopecia are currently lacking.

The development of alopecia can be influenced by underlying diseases and health conditions, such as systemic diseases like systemic lupus erythematosus, rheumatoid arthritis, and thyroid diseases. In addition, symptoms can be related to certain medications, such as birth control pills, blood pressure treatments, and psychotropic agents. Nutritional deficiency, such as low vitamin and iron intake, can also be a contributing factor.[14–17] Understanding the underlying risk factors is an important part of identifying appropriate preventive and curative strategies for alopecia.[18]

Individuals affected by hair loss can suffer from interpersonal and social stigmatization, which may have a subsequent influence on their quality of life.[19] Since PHCs are the first line of providing healthcare services for members of the community, primary care physicians should play an important role in the early identification of those who are at risk or identifying those with underlying conditions. Early identification is important to provide early care and avoid the potential subsequent social and psychological impacts of the condition.[20] Multiple studies have been conducted to understand the distribution of AA in certain regions in Saudi Arabia; however, evidence concerning the prevalence of alopecia in Saudi Arabia and the Jazan region is currently limited. Our study aims to estimate the prevalence of hair loss and its associated risk factors among PHCs attendees in the Jazan region.

Methods

Study setting and context

This investigation was a cross-sectional study conducted in the Jazan region of southwest Saudi Arabia, near the northern border of Yemen. Data collection were conducted between August and October 2020 in selected PHCs in the region. Ethical approval to conduct the study was granted through the Jazan Health Ethics Committee (Approval No. 2018).

Data collection

The study aimed to estimate the prevalence of alopecia and its underlying factors throughout the population of Jazan, with attendees of PHCs in the region utilized as a representative sample of the community. A total of 23 PHCs were randomly selected from five governorates in the region with comparatively high population densities. These governorates were Jazan, Sabya, Abu-Arish, Al-Ahad, and Samtah.[21] Identification of potential participants was performed at the selected PHCs. After obtaining their informed consent, candidates participated in the study by completing a structured questionnaire.

A questionnaire was developed by consulting the relevant literature concerning the measurement of the frequency of hair loss, and its clinical features and determinants.[20,22–24] PHC attendees were asked about their demographic characteristics, presence of hair loss, and among attendees who confirmed having hair loss, they were further asked about associated clinical features, healthcare-seeking behavior, and factors that might contribute to the development of their condition. The final version of the questionnaire was reviewed by two dermatology consultants to evaluate the validity of the content, and it was piloted with a small sample of 10 participants to evaluate the clarity of the questions and the time required to complete the form.

The questionnaire was completed during interviews, which were conducted by trained medical students. To ensure consistency in the data collection process, a standardized data collection protocol was shared with the interviewer and they were educated on how to perform the interviews and record the data. Sample-size estimation for surveys was conducted using the StatCalc function of Epi Info. Since no specific hair loss value is available for the Saudi population, the figure of 49% was chosen based on current evidence relating to the prevalence of hair loss reported by Gan and Sinclair.[23] Assuming a 5% margin of error, 99% confidence level, and 20% nonresponse rate, the estimated sample size was 795 participants.

Data analysis

Data were analyzed using the Statistical Package for the Social Sciences software (v. 25). Frequencies and distributions were used to summarize binary and categorical data. A comparison between the demographic features of those who reported hair loss and those with no hair loss was made, and the statistical difference was measured using a Chi-squared test. A *P* value of

0.05 or less was deemed statistically significant in regard to the Chi-squared tests performed.

Results

A total of 729 participants consented to be involved in this study, with a response rate of 98%. The number of respondents who reported having hair loss was 483, representing 66.3% of the whole sample. The characteristics of respondents and comparisons of these between those with hair loss and those without hair loss are displayed in Table 1. The differences in gender, age, educational level, marital status, occupation, and body mass index (BMI) between those reporting hair loss and those not reporting the condition were found to be significantly different ($P < 0.05$). The frequency of respondents reporting hair loss was higher among females, those older than 30, those

Table 1: Frequency and distribution of the socio-demographic characteristics of 729 attendees of PHCs in Jazan, Saudi Arabia, and classification according to reported hair loss				
Variables	**Participants reporting hair loss**		**Participants reporting no hair loss**	***P***
Whole sample (*n*=729)	483	66.3%	246	33.7%
Gender	123	25.5%	143	58.1%	<0.001
Male	360	74.5%	103	41.9%
Female				
Age*	229	47.6%	159	64.9%	<0.001
<30	252	52.4%	86	35.1%
30 or older				
Nationality	468	96.6%	240	97.6%	0.661
Saudi	15	3.1%	6	2.4%
Non-Saudi				
Educational Level	26	5.4%	11	4.5%	0.008
Primary	25	5.2%	7	2.8%
Secondary	87	18%	70	28.5%
Intermediate	52	72.2%	20	8.1%
Diploma	274	56.7%	135	54.9%
Bachelor	19	3.9%	3	1.2%
Postgraduate				
Marital status	192	39.8%	134	54.5%	0.001
Single	253	52.4%	100	40.7%
Married	25	5.2%	10	4.1%
Divorced	13	2.7%	2	0.8%
Widow				
Occupation	127	26.3%	97	39.4%	<0.001
Student	170	35.2%	75	30.5%
Governmental employee	25	5.2%	17	6.9%
Private sector employee	69	14.3%	33	13.4%
Unemployed	92	19%	24	9.8%
Housewife				
BMI*	31	6.4%	33	13.4%	<0.001
Under weight	230	47.7%	129	52.4%
Normal	123	25.5%	56	22.8%
Over weight	98	20.3%	28	11.4%
Obese				

*Three missing values for age, and one missing value for BMI level

with higher education experience, those who are married, those with government jobs, housewives, and participants with higher BMI values. The only demographic variable with no significant difference was the nationality of the respondents, which can be explained due to the restricted access to healthcare services for non-Saudis at PHCs.

Table 2 shows the clinical characteristics of the 483 respondents who reported hair loss. Only 97 (20%) of this group had seen a physician regarding their hair loss. Among those who did have a diagnosis for their hair loss, the majority had telogen effluvium (31 patients), followed by androgenic alopecia (25 patients), traction alopecia (14 patients), and only one patient reported an AA diagnosis.

Although only 97 participants reported seeking a consultation from a physician regarding their hair loss, 185 reported taking medications to treat their hair loss, of whom 108 (58.3%) did not seek any medical advice to identify the cause of their condition. This may demonstrate a stigma toward seeking healthcare advice in relation to alopecia, with many affected individuals seeking information to manage their condition elsewhere.

The distribution of hair loss risk factors among the respondents with hair loss is illustrated in Table 3. The most common female-specific risk factors were an irregular monthly period or menopause. Almost half of the respondents with hair loss reported experiencing stressful events, such as divorce, events related to loved ones, or occupational difficulties. In addition, in this same group, more than half reported having gray hair, and about 46% reported having a family history of hair loss, of whom the majority of cases were among first-degree relatives.

Proportions of participants reporting factors related to dietary intakes such as an imbalanced diet, iron deficiency, and vitamin deficiency varied between 23% and 42%. In addition, 94 respondents declared applying chemical treatments to their hair loss. A minority of the respondents with hair loss reported being smokers, receiving chemotherapy, or having a family history of immunodeficiency. Finally, the proportion of respondents who reported both hair loss and being diagnosed with chronic diseases varied between 0.2% and 7.4%, with diabetes, hypertension, asthma, and polycystic ovarian syndrome (POS) being the most common conditions.

Table 4 illustrates a comparison between what male and female participants believed had contributed to their hair loss. A majority of the male participants believed that their hair loss was related to hereditary causes (64%) and psychological factors (40%), whereas a majority of the female participants indicated that their hair loss condition was due to a lack of minerals and vitamins (57%) and psychological factors (50%). A marked and significant difference between the beliefs of male and female participants was observed in regard to the causes of their conditions, including hereditary factors, hair care, diet, hair dyeing, and their use of medications ($P < 0.05$).

Table 2: Healthcare seeking behavior related to hair loss and reported clinical characteristics of hair loss among 483 participants Jazan, Saudi Arabia

Variables	Frequency	Proportion
Respondents who consulted a physician to learn the cause of their hair loss	97	20.1%
Reported diagnoses associated with hair loss		
Androgenic alopecia, hereditary	25	5.2%
Alopecia areata	1	0.2%
Telogen effluvium, as a result of stress or severe conditions	31	6.4%
Traction alopecia, (mechanical hair loss caused by repeated hair pulling and tension)	14	2.9%
Respondents who reported using medications to treat their hair loss	185	38.3%
Frequency of reported dandruff among the respondents with reported hair loss		
Most days	124	25.7%
Sometimes	142	29.4%
Rarely	95	19.7%

Table 3: Distribution of hair loss risk factors among 483 participants who reported hair loss in Jazan, Saudi Arabia

Risk factor	Frequency	Proportion
Female-specific risk factors		
Menstrual irregularity/menopause	350	97%*
Presence of stressful events such as divorce, sickness of loved ones, or occupational difficulties	237	49.1%
Use of chemotherapy before or during hair loss	12	2.5%
Presence of gray hair	269	55.6%
Smoking		
Current smoker	53	11%
Former smoker	20	4.1%
Application of chemical treatment for hair	94	19.5%
Having imbalanced diet such as vegetarian diet	110	22.8%
Presence of iron deficiency	153	31.7%
Presence of vitamin deficiency	202	41.8%
Presence of family history of hair loss		
Among first-degree relatives	152	31.4%
Among more distant relatives	33	6.8%
Presence of family history of immunodeficiency	30	6.2%
Diagnosis of the following conditions:		
Thyroid disease	21	4.4%
Diabetes mellitus	35	7.4%
Atopic disease	16	3.3%
Asthma	30	6.3%
Hypertension	32	6.6%
Polycystic ovarian syndrome	31	6.4%
Allergic rhinitis	29	6.0%
Psoriasis	2	0.4%
Vitiligo	1	0.2%
Rheumatoid arthritis	22	4.6%
Systemic lupus erythematosus	2	0.4%

*Proportions among females reporting hair loss

Discussion

This investigation was a cross-sectional study with the aim of identifying the prevalence of hair loss among PHCs attendees in Jazan, Saudi Arabia, and the contributing factors associated with their condition. The prevalence of hair loss in the recruited sample was 66%, and the frequency of hair loss was variable according to the measured demographic characteristics; however, among the measured demographic variables, gender appears to have the highest level of variability, with the majority of participants reporting hair loss being female. Around 80% of the respondents who reported hair loss did not seek any healthcare advice from a physician with regard to their condition. The most frequently reported type of hair loss was telogen effluvium, followed by androgenic alopecia. When the respondents gave additional information regarding associated risk factors, the majority indicated the presence of gray hair, stressful events, nutritional deficiencies, and an irregular period or menopause. Finally, a variation between the perception of male and female participants regarding what they believed might be contributing

Table 4: Opinions of 483 participants who reported hair loss in Jazan, Saudi Arabia, about factors associated with their condition according to gender

Factors	Males (*n*=123)		Females (*n*=360)		P
	Frequency	Proportion	Frequency	Proportion	
Hereditary	78	63.9%	60	16.7%	<0.001
Autoimmune conditions	6	4.9%	30	8.4%	0.212
Psychological factors	49	39.8%	179	49.9%	0.055
Wrong handling of hair	22	18%	123	34.3%	0.001
Lack of minerals and vitamins	38	31.1%	205	57.1%	<0.001
Use of medications	1	0.8%	59	16.4%	<0.001
Use of Roaccutane pills	1	0.8%`	14	3.9%	0.091
Use of hair dyes	8	6.6%	91	25.3%	<0.001

to their hair loss was related to hereditary factors, hair care, diet, hair dyeing, and using medications.

Although no similar studies into the prevalence and determinants of all types of hair loss among the Saudi community were detected in the literature, our findings can be compared with other relevant investigations assessing specific types of alopecia or other dermatological conditions. In a systematic review and meta-analysis by Almohideb, a study into the prevalence of dermatological conditions in Saudi Arabia was performed with a pooled sample of 30,436 participants from 14 different studies. It was noted that 7.5% of the conditions were related to hair loss and the proportion of subjects identified with hair loss was higher among females, which is similar to our findings; however, specific types of alopecia and its determinants were not indicated in the review.[25]

Existing studies assessing the prevalence of AA in Saudi Arabia provide variable findings. Hospital-based investigations give estimates varying between 2.3%[9] and 6.5%,[13] and although Mahjoub's study[10] assessed the number of patients diagnosed with AA in tertiary healthcare centers, an exact figure regarding the frequency of the condition was not provided. Finally, an online investigation conducted on a national scale provided a higher estimate for the prevalence of AA (13.8%) (12); however, our investigation was only able to identify one case (0.2%) reporting AA, suggesting a very low prevalence of this disease among PHC attendees. Furthermore, our investigation identified 31 patients (6.4%) diagnosed with telogen effluvium, which can be compared with a hospital-based investigation conducted in Makkah where they identified 279 patients with the same condition (among 16,014 attendees of dermatology clinics between 2011 and 2013).[11]

Comparing the findings of our investigation with similar international studies yielded several similarities. In an Australian postal survey conducted to assess hair loss among males and females, hair loss was found to be associated with aging, which is similar to our finding of increased hair loss among older subjects.[23] In a Turkish study assessing the frequency and factors related to androgenic alopecia among dermatology clinic attendees, it was noted that androgenic hair loss was significantly

higher among postmenopausal women and was associated with menstrual irregularity.[26] Again, this is similar to our results where a majority of the female participants who reported hair loss were either postmenopausal or experiencing menstrual irregularities.

In our investigation, only 14 subjects reported being diagnosed with traction alopecia; however, 145 respondents with hair loss believed wrong poor hair care could be a contributing factor, with a higher proportion of female participants suggesting this (*P* < 0.001). This is similar to the findings of a Nigerian study into the prevalence of hair loss among females in a tertiary healthcare center where it was indicated that traction alopecia was the most common type in their sample (97.5%), indicating the importance of recognizing inadequate hair care practices as a contributing factor for alopecia.[27] This can be further elaborated to indicate the importance of recognizing the use of chemical treatments for hair loss without seeking professional healthcare advice, as it was noted in our investigations that 58% of subjects who use medical treatments for their hair did not seek any medical advice concerning this.

Limitations

This study has both strengths and weaknesses. Through assessing the prevalence of hair loss in a community setting rather than relying on medical records of dermatology clinics attendees, we were able to identify individuals who are suffering from hair loss yet do not seek any medical advice. This also helped us understand behaviors toward seeking healthcare and the use of hair medications without first seeking a professional diagnosis, which may indicate inadequate hair care among the recruited sample. The main weakness of this investigation is related to relying on a reported presence of hair loss without having it confirmed with a clinical diagnosis.

Conclusion

The detected prevalence of hair loss in attendees of PHCs in Jazan was 66%, with this figure being variable according to the demographic characteristics of the participants. A minority of participants who reported suffering from hair loss were further evaluated by healthcare professionals to learn the cause of their hair loss. The beliefs of respondents concerning what might be

contributing to their hair loss conditions and the application of chemical treatments might be interesting areas of further clinical investigation to identify the impact of poor hair care on increasing the risk of hair loss and to develop suitable preventive strategies.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Al Ahoud AM, Zito PM. Alopecia. Treasure Island (FL): StatPearls; 2020.
2. Villasante Fricke AC, Miteva M. Epidemiology and burden of alopecia areata: A systematic review. Clin Cosmet Investig Dermatol 2015;8:397–403.
3. Korta DZ, Christiano AM, Bergfeld W, Duvic M, Ellison A, Fu J, *et al.* Alopecia areata is a medical disease. J Am Acad Dermatol 2018;78:832–4.
4. Hunt N, McHale S. The psychological impact of alopecia. BMJ 2005;331:951-3.
5. 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.
6. Aghaei S, Saki N, Daneshmand E, Kardeh B. Prevalence of psychological disorders in patients with alopecia areata in comparison with normal subjects. ISRN Dermatol 2014;2014. doi: 10.1155/2014/304370.
7. Wang X, Xiong C, Zhang L, Yang B, Wei R, Cui L, *et al.* Psychological assessment in 355 Chinese college students with androgenetic alopecia. Medicine (United States) 2018;97:e11315.
8. Marks DH, Penzi LR, Ibler E, Manatis-Lornell A, Hagigeorges D, Yasuda M, *et al.* The Medical and Psychosocial Associations of Alopecia: Recognizing hair loss as more than a cosmetic concern. Am J Clin Dermatol 2019;20:195–200.
9. Alshahrani AA, Al-Tuwaijri R, Abuoliat ZA, Alyabsi M, Aljasser MI, Alkhodair R. Prevalence and clinical characteristics of alopecia areata at a tertiary care center in Saudi Arabia. Dermatol Res Pract 2020;2020:7194270.
10. Mahjoub T. The clinico-epidemiological profile of alopecia areata: A hospital-based study in Jeddah, Saudi Arabia. Journal of Dermatology and Dermatologic Surgery. 2020;24:122-4.
11. Fatani MI, Bin mahfoz AM, Mahdi AH, Alafif KA, Hussain WA, Khan AS, *et al.* Prevalence and factors associated with telogen effluvium in adult females at Makkah region, Saudi Arabia: A retrospective study. J Dermatol Dermatologic Surg 2015;19:27–30.
12. Al-ajlan A, Alqahtani ME, Alsuwaidan S, Alsalhi A. Prevalence of alopecia areata in Saudi Arabia: Cross-sectional descriptive study. Cureus 2020;12:e10347.
13. Abd El-Mawla AA, Maghrabi I. Prevalence and treatment of Alopecia areata in Taif area, KSA. Saudi J Heal Sci 2015;4:125-8.
14. Lin RL, Garibyan L, Kimball AB, Drake LA. Systemic causes of hair loss. Ann Med 2016;48:393–402.
15. Almohanna HM, Ahmed AA, Tsatalis JP, Tosti A. The role of vitamins and minerals in hair loss: A review. Dermatol Ther (Heidelb) 2019;9:51–70.
16. Guo EL, Katta R. Diet and hair loss: Effects of nutrient deficiency and supplement use. Dermatol Pract Concept 2017;7:1–10.
17. Chang YJ, Lee YH, Leong PY, Wang YH, Wei JCC. Impact of rheumatoid arthritis on alopecia: A Nationwide population-based cohort study in Taiwan. Front Med 2020;7:150.
18. Benigno M, Anastassopoulos KP, Mostaghimi A, Udall M, Daniel SR, Cappelleri JC, *et al.* A large cross-sectional survey study of the prevalence of Alopecia Areata in the United States. Clin Cosmet Investig Dermatol 2020;13:259–66.
19. Schielein MC, Tizek L, Ziehfreund S, Sommer R, Biedermann T, Zink A. Stigmatization caused by hair loss – A systematic literature review. J Dtsch Dermatol Ges 2020;18:1357-68.
20. Fabbrocini G, Cantelli M, Masarà A, Annunziata MC, Marasca C, Cacciapuoti S. Female pattern hair loss: A clinical, pathophysiologic, and therapeutic review. Int J Womens Dermatol 2018;4:203–11.
21. General Authority for Statistics. Population Distribution (Saudis and Non Saudis) in Governorates of Jazan Region. 2014; https://www.stats.gov.sa/en/4601. Accessed 3rd of September, 2021.
22. You HR, Kim S-J. Factors associated with severity of alopecia areata. Ann Dermatol 2017;29:565–70.
23. Gan DCC, Sinclair RD. Prevalence of male and female pattern hair loss in Maryborough. J Investig dermatology Symp Proc 2005;10:184-9.
24. Cranwell W, Sinclair R. Male Androgenetic Alopecia. [Updated 2016 Feb 29]. In: Feingold KR, Anawalt B, Boyce A, et al., editors. Endotext [Internet]. South Dartmouth (MA): MDText.com, Inc.; 2000-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK278957/.
25. Almohideb M. Epidemiological patterns of skin disease in Saudi Arabia: A systematic review and meta-analysis. Dermatol Res Pract 2020;2020. doi: 10.1155/2020/5281957.
26. Salman KE, Altunay IK, Kucukunal NA, Cerman AA. Frequency, severity and related factors of androgenetic alopecia in dermatology outpatient clinic: Hospital-based cross-sectional study in Turkey. An Bras Dermatol 2017;92:35–40.
27. Sani H, Ogunbiyi O, George A, Okoro O. Prevalence and pattern of alopecia in secondary and tertiary institutions in Ibadan. Sub-Saharan African J Med 2016;3:148-52.