Portuguese Journal of Dermatology and Venereology

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ORIGINAL ARTICLE

Impact of hair loss on quality of life and mental health: a comparative study of androgenetic alopecia and alopecia areata

Impacto da queda de cabelo na qualidade de vida e saúde mental: um estudo comparativo entre alopécia androgenética e alopécia areata

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Abstract

Objectives: Hair has a crucial role in the esthetic appearance of a person, making them look young and confident. Hair loss overall affects self-esteem and is thus prone to psychiatric comorbidities such as depression and anxiety. Thus, this study aims to know the quality of life in patients suffering from common hair loss conditions, such as androgenetic alopecia (AGA) and alopecia areata (AA). **Methods:** A total of 200 AGA and AA patients were enrolled in this study. Dermatology Life Quality Index (DLQI) questionnaire, Beck Depression Inventory Scale (BDI), Beck Anxiety Inventory Scale (BAI), and Patient Health Questionnaire (PHQ) were used to study the quality of life and psychiatric comorbidities in them. **Results**: A total of 88 AA and 112 AGA patients were enrolled in our study. The mean DLQI score was 12.34 in AA and 12.93 in AGA, which implied a large effect on QoL. The mean BAI scale was 22.35 in AA and 22.18 in AGA, and the mean BDI scale was 24.63 in AA and 26.34 in AGA, which implied a moderate effect of anxiety and depression. Almost 50% of patients in AGA showed severe anxiety. PHQ in AA and AGA showed a significant difference in depressive and binge eating disorders. **Conclusions:** There was a large impact on the QoL amongst all of our patients, and anxiety and depression were moderately documented. There was no statistically significant difference between the psychiatric comorbidities among patients with AA and AGA. Understanding the psychological impact on the patients of AA and AGA can help with effective counseling and treatment.

Keywords: Alopecia areata. Androgenic alopecia. Beck anxiety inventory scale. Beck depression inventory scale. Dermatology life quality index.

Resumo

Objetivos: O cabelo desempenha um papel crucial na aparência estética de uma pessoa, fazendo-a parecer jovem e confiante. A queda de cabelo, em geral, afeta a autoestima e, por isso, predispõe-na para comorbilidades psiquiátricas, como a depressão, a ansiedade, etc. Assim, este estudo tem como objetivo avaliar a qualidade de vida em doentes que sofrem de condições comuns de queda de cabelo, como a alopécia androgenética (AAG) e a alopécia areata (AA). **Métodos:** Um total de 200 doentes com AAG e AA foram incluídos neste estudo. O questionário Dermatology Life Quality Index (DLQI), a escala

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Received: 08-10-2025
Accepted: 13-01-2026
DOI: 10.24875/PJDV.25000072

Available online: 20-03-2026
Port J Dermatol and Venereol. 2026;84(1):32-37
www.portuguesejournalofdermatology.com

Beck Depression Inventory (BDI), a escala Beck Anxiety Inventory (BAI) e o Patient Health Questionnaire (PHQ) foram utilizados para estudar a qualidade de vida e as comorbilidades psiquiátricas. **Resultados:** Um total de 88 doentes com AA e 112 com AAG foram incluídos no nosso estudo. A pontuação média do DLQI foi de 12,34 no AA e de 12,93 no AIG, o que implicou um grande efeito na qualidade de vida. A escala média do BAI foi de 22,35 no AA e de 22,18 no AIG, e a escala média do BDI foi de 24,63 no AA e de 26,34 no AIG, o que implicou um efeito moderado da ansiedade e da depressão. Quase 50% dos doentes em AIG apresentaram ansiedade grave. O PHQ em AA e AIG mostrou uma diferença significativa nas perturbações depressivas e de compulsão alimentar periódica. **Conclusões:** Houve um grande impacto na qualidade de vida entre todos os nossos doentes, e a ansiedade e a depressão foram moderadamente documentadas. Não houve diferença estatisticamente significativa entre as comorbilidades psiquiátricas entre os doentes com AA e AIG. Compreender o impacto psicológico nos doentes com AA e AIG pode auxiliar no aconselhamento eficaz durante o tratamento.

Palavras-chave: Alopecia areata. Alopecia androgenética. Escala de inventário de ansiedade de beck. Escala de inventário de depressão de beck. Índice de qualidade de vida em dermatologia.

Introduction

Alopecia is defined as the loss of hair on the scalp and sometimes on the body as well. As a chronic dermatological condition, it can cause anxiety and/or depression according to various studies[1]. Alopecia can be classified into cicatricial and non-cicatricial alopecia. The main causes of non-cicatricial alopecia are telogen effluvium, androgenetic alopecia (AGA), and alopecia areata (AA)[2]. Among them, AA and AGA are easily visible and can affect the physical appearance of an individual. AGA affects about 50% of men and 19% females, and AA can affect 2.1% of the population[3-5].

Hair loss is perceived in terms of an abnormality because it does not conform to the norms of physical appearance in a society and has the potential to make an individual lose their own self-worth[6]. Therefore, it is critical for physicians to understand how alopecia affects patients' quality of life (QoL) and assess the severity of this impact.

In this study, we aim to assess how the two common non-cicatricial alopecias (AA and AGA) affect the appearance and QoL of these patients, screen for psychiatric comorbidities such as anxiety, depression, and other psychiatric disorders, and compare these effects on the two subtypes of alopecia.

Methodology

We conducted a cross-sectional study on all consenting patients above 18 years suffering from AGA or AA on the scalp, diagnosed clinically and by dermoscopy, who visited the dermatology outpatient department between March and August 2020. We excluded patients suffering from other skin conditions, known psychiatric disorders, or any other chronic diseases that could have an effect on QoL. Furthermore, patients under treatment in the past 6 months were excluded from the study. The sample size was calculated to be 200 according to Fisher's formula.

Ethical committee clearance was obtained from the institutional ethics committee. Informed consent was obtained from patients participating in the study. The demographic details were collected, and a complete history and physical examination were conducted, reporting the type of non-scarring alopecia on the basis of the history and clinical and dermoscopic examination.

The severity of the non-scarring alopecia was assessed by SALT scoring for AA and the Hamilton Norwood scale for androgenic alopecia. Under psychiatric supervision, all patients were explained about the DLQI questionnaire and the Beck Depression Inventory Scale (BDI) and BAI scale. Patients were screened for psychiatric comorbidities such as bulimia, panic syndromes, and somatic disorders using patient health questionnaires (PHQ), a self-report inventory that includes multiple-choice questions for screening and diagnosis of mental health disorders, and the diagnosis was confirmed clinically by a psychiatrist. All patients were offered dermatological and psychiatric treatment when warranted.

Data were analyzed using the Statistical Package for the Social Sciences version 21. Continuous variables were expressed as mean ± standard deviation, and categorical variables as frequencies (%). Quantitative data were compared using the Chi-square test. Pearson simple correlation analyses were performed to determine associations between continuous parameters. A $p < 0.05$ was considered statistically significant.

Results

A total of 200 patients with alopecia were interviewed during the study period. The mean age was 33.92 ±

Table 1. DLQI scores according to the type of alopecia

DLQI score	Characteristic	Alopecia areata (%)	Androgenetic alopecia (%)	p
Mean DLQI score ± SD		12.34 ± 5.43	12.93 ± 7.43	0.534
0-1	No effect	2 (2.3)	8 (7.1)	
2-5	Small effect	12 (13.6)	12 (10.7)	
6-10	Moderate effect	16 (18.2)	22 (19.6)	
11-20	Large effect	52 (59.1)	50 (44.6)	
21-30	Extremely large effect	6 (6.8)	20 (17.9)	

DLQI: dermatology life quality index.

Table 2. BAI scores according to the type of alopecia

BAI score	Characteristic	Alopecia areata (%)	Androgenetic alopecia (%)	p
Mean BAI score ± SD		22.35 ± 11.5	23.2 ± 16.6	0.691
0-7	No effect	8 (9.1)	28 (25)	
8-15	Mild anxiety	20 (22.7)	12 (10.7)	
16-25	Moderate anxiety	26 (29.5)	16 (14.3)	
26-63	Severe anxiety	34 (38.6)	56 (50)	

BAI: beck anxiety inventory.

11.65 years, with a male (58%) and female (42%) ratio of 1.4:1. There were 88 cases (M:58, F:30) of AA and 112 (M:54, F:58) of AGA. The ratio of males-to-females was 1.9:1 and 1:0.9 in AA and AGA, respectively. The mean age was 32.1 ± 10.6 years for AA and 35.4 ± 12.3 years for AGA.

The mean SALT score in AA patients was 2.72 ± 1.14, and the Hamilton–Norwood scale showed stage II (30.35%) and stage III (26.78%) to be more common among AGA patients.

DLQI scores

For the 200 patients with AA and AGA, the DLQI scores ranged from 0 to 30, with a mean score of 12.34 ± 5.43 and 12.93 ± 7.43, respectively. About 59% of AA and 20% of AGA patients had a large impact on QoL, and 6.8% of AA patients had an extremely large impact on QoL as compared to 18% of AGA patients (Table 1).

Beck anxiety and depression inventory scales

Mean BAI score was 22.35 ± 11.5 in AA and 23.2 ± 16.6 in AGA, with moderate anxiety in 29.5% and 14.3%, and severe anxiety in 38.6% and 50 %, respectively, in AA and AGA patients (Table 2).

Mean BDI score was 24.63 ± 12.03 in AA and 26.34 ± 15.5 in AGA. Moderate depression was detected in 38.6% and 25% of AA and AGA patients, and severe to extremely severe depression in 29.6% and 39.3%, respectively (Table 3).

PHQ

Major and other depressive syndromes were significantly higher in AGA (25.89%) compared to AA (10.22%) (p = 0.005). Binge eating disorders were significantly higher (p = 0.025) in AA (27.27%) compared to AGA (8.9%). Other psychiatric disorders were also noted in both AA and AGA (Table 4).

Correlation between DLQI, BAIS, and BDIS with the severity of alopecias

The severity of AA and AGA predominantly showed a very positive correlation to perfect correlation with the DLQI, BAIS, and BDIS scores, indicating that severer the hair loss greater the impact on QoL, anxiety, and depression (Tables 5 and 6).

Table 3. BDI scores according to the type of alopecia

BDI Score	Characteristic	Alopecia areata (%)	Androgenetic alopecia (%)	p
Mean BDI score ± SD		24.63 ± 12.03	26.34 ± 15.5	0.394
1-10	Normal	12 (13.6)	20 (17.9)	
11-16	Mild mood disturbance	12 (13.6)	12 (10.7)	
17-20	Borderline clinical depression	4 (4.5)	8 (7.1)	
21-30	Moderate depression	34 (38.6)	28 (25)	
31-40	Severe depression	16 (18.2)	26 (23.2)	
41-63	Extreme depression	10 (11.4)	18 (16.1)	

BDI: beck depression inventory.

Table 4. Patient health questionnaire according to the type of alopecia

Patient health questionnaire	Alopecia areata (%)	Androgenetic alopecia (%)	p
Q1 Somatic disorder	13 (14.7)	21 (18.75)	0.459
Q2 Major and other depressive syndromes	9 (10.22)	29 (25.89)	0.00512
Q3 Panic syndrome and other anxiety syndromes	21 (23.86)	17 (15.17)	0.12
Q4 Bulimia and anorexia nervosa	13 (14.77)	23 (20.53)	0.29
Q5 Binge eating disorder	24 (27.27)	10 (8.9)	0.0006
Q6 Alcohol abuse	8 (9.0)	12 (10.71)	0.70

Table 5. Correlation between DLQI, BAIS, and BDIS with the severity of AA

AA (n = 88)	Stage	%	Severity	DLQI	r	BAIS	r	BDIS	r
n = 22	S1	1-24	Mild	14.75	+1.00	24.25	+0.99	24.88	+1.00
n = 18	S2	25-49	Moderate	11.5	+0.82	22.25	+0.99	27.96	+1.00
n = 16	S3	50-74	Severe	10.9	+0.96	20.28	+0.93	23.18	+0.99
n = 29	S4	75-99	Very severe	12.2	+0.94	21.64	+1.00	24.04	+0.99
n = 3	S5	100	Alopecia totalis	15.2	+1.00	36.04	+1.00	31.11	+1.00

r: Pearson correlation, + 1.0: perfect positive correlation, +0.90-+0.99: very strong positive correlation, +0.70-+0.89: strong positive correlation.
DLQI: dermatology life quality index; BAIS: beck anxiety inventory scale; BDIS: beck depression inventory scale; AA: alopecia areata.

Discussion

This study included a total of 200 patients, mostly males (58%), and the majority were in the 21-30 years age group (46%), which is typical for these chronic forms of alopecia.

The mean DLQI score was 12.34 and 12.93 in AA and AGA, respectively, which indicated a large effect on QoL in both groups, but superior to the study by Williamson et al., where the score was 8.3[1], and Zhang and Zhang[7] with a score of 6.3. Considering only AA, the mean total DLQI score was 7.9 ± 7.6 and 6.4 ± 5.5, respectively, in the studies by Abedini et al. and Ghajarzadeh et al.[8,9].

From our study, we could interpret that both AA and AGA significantly impacted the QoL, with no statistically significant difference in the mean scores between the two groups. The difference was that almost all AA had a significant impact on QoL, whereas it is noted that the majority of AA patients had a large effect, and in AGA patients, there was a wider distribution, including a higher percentage showing either no effect or an extremely large effect. Embarrassment (60% and 39% in AA and AGA), effect on their social activities (64%

Table 6. Correlation between DLQI, BAIS, and BDIS with the severity of AGA

AGA (n = 112)	Hamilton-Norwood scale (M: 54)	DLQI	r	BAIS	r	BDIS	r
n = 22	Stage I-II Mild	11.06	+ 0.93	30.26	+ 0.96	23.02	+ 0.92
n = 26	Stage III-V Moderate	11.39	+ 0.89	31.96	+ 0.96	24.67	+ 0.90
n = 6	Stage VI-VII Severe	11.72	+ 1.00	33.37	+ 1.00	26.34	+ 1.00
	Ludwig scale (F: 58)						
n = 35	Stage I Mild	13.23	+ 0.90	14.22	+ 0.94	26.33	+ 0.99
n = 16	Stage II Moderate	13.66	+ 0.92	13.11	+ 0.88	28.26	+ 1.00
n = 7	Stage III Severe	16.52	+ 1.00	16.28	+ 1.00	29.42	+ 1.00

r: Pearson correlation, +1.0: perfect positive correlation, + 0.90-+ 0.99: very strong positive correlation, + 0.70-+ 0.89: strong positive correlation.
AGA: androgenetic alopecia; DLQI: dermatology life quality index, BAIS: beck anxiety inventory scale; BDIS: beck depression inventory scale.

and 41% in AA and AGA), and uncomfortable treatment (49% and 41% in AA and AGA) were some of the contributing factors for the decrease in QoL in our study.

In our study, the prevalence of severe anxiety was 38.6% and 50%, with mean anxiety scores of 22.35 ± 11.5 and 23.2 ± 16.6 in AA and AGA patients, respectively. AGA patients were significantly ($p < 0.05$) more prone to severe anxiety compared to AA. Psychiatric disorders and AA might share some pathophysiologic mechanisms, and there are theories that stress neuroendocrine immunology might play an important role[10]. Trembling of hands (42% in AA and 34% in AGA), difficulty in breathing (49% in AA and 23% in AGA), feeling hot and wobbly, unable to relax, unsteadiness, and heart pounding were reported in an average of 42-51% among both AA and AGA. In our study, 25% of AGA, as compared to 9.1% in AA, showed no anxiety symptoms, which is a significant difference between the two groups ($p < 0.001$), but a greater proportion of AGA patients (50%) fall into the severe anxiety category, compared to 38.6% of AA patients. AGA patients are more likely to either have no anxiety or severe anxiety – suggesting a potential bimodal distribution in emotional response. This could point to differing psychological impacts of visible versus progressive hair loss types. A systematic review by Villasante Fricke and Miteva reported that there was a lifetime prevalence of 66-74% of psychiatric disorders, a 39-62% prevalence of depression, and a 39-62% prevalence of generalized anxiety disorder. Furthermore, QoL was reported to be decreased in half of the AA patients[11].

The prevalence of severe depression among AA patients (11.4%, with mean score 24.63 ± 12.03) is comparable with another study where 65.9% of persons with AA had depression or anxiety[10] and contrasts with Karia et al. study that reported relatively low levels of anxiety (4%) and depression (18%) in AA patients[12] and Vélez-Muñiz et al. study that, using the same assessment tools (BDI and BAI) found no difference in the levels of depression and anxiety between AA and controls[13]. There is growing evidence that depression could be before the onset of AA[14].

Depression was similar in AGA patients (16.1% with a mean score of 26.34 ± 15.5), but AGA patients skewed more toward severe and extreme depression, whereas AA patients had more in the moderate range. Discouraged about the future (58% in AA and 48% in AGA), irritated or annoyed (47% in AA and 45% in AGA), worried about physical problems (47% in AA and 41% in AGA) are some of the depressive symptoms noted in our study.

Overall, both groups show high rates of clinical depression, which highlights the psychological burden of hair loss and supports the need for mental health screening in both patient populations, but especially in those with AGA. Interestingly, we observed no statistically significant difference in anxiety or depression scores between AA and AGA groups based on p-values, but AGA patients seem to be associated with more severe cases of both anxiety and depression, whereas AA patients show more moderate levels, indicating potentially more chronic, but less extreme, psychological impact. The strong positive correlation of the severity of alopecia with DLQI, BAIS, and BDIS indicates that even a small visible patch of hair loss can affect the psychiatric well-being of a person.

Using the PHQ, even though we noticed higher incidence of panic syndrome and other anxiety syndromes (23.86%) in AA, significant difference was seen in major and other depressive syndromes in AGA (10.22%)

as compared to AA (25.89%) (p = 0.005) with Binge eating disorders occurring significantly more in AA (27.7%) (p = 0.0006) than in AGA (8.9%). In accordance with our data, in a review by Cash, 52% of women rated their emotional stress for AGA as very to extremely upsetting and also reported negative body image, poorer self-esteem, and social anxiety[15].

Conclusion

There was a large impact on the QoL among AGA and AA patients, and anxiety and depression were moderately documented, with no statistically significant difference between the groups in which concerns psychiatric comorbidities. There is a paucity in research exploring the patient's belief on AA and AGA and how it relates to their mental health. Hence, this study sheds light on the psychosocial effects of the disease. A proper awareness and consciousness about the psychiatric comorbidities associated with this disease is essential for the desirable management of these patients.

Funding

None.

Conflicts of interest

None.

Ethical considerations

Protection of human subjects and animals. The authors declare that no experiments on humans or animals were performed for this research.

Confidentiality, informed consent, and ethical approval. The authors have followed their institution's confidentiality protocols, obtained informed consent from all patients, and secured approval from the Ethics Committee. SAGER guidelines have been followed as applicable to the nature of the study.

Declaration on the use of artificial intelligence (AI). The authors declare that no generative artificial intelligence was used in the writing or creation of the content of this manuscript.

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