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Impact of Androgenic Alopecia on Quality of Life Using the Dermatology Life Quality Index (DLQI): A Cross-Sectional Study in a Tertiary Care Hospital

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Abstract:

Background: Androgenic alopecia (AGA), commonly known as male or female pattern baldness, is the most prevalent form of hair loss affecting both genders. It often leads to significant emotional and psychological distress, impacting self-esteem, social interactions, and overall quality of life (QoL). Despite its widespread occurrence, the psychosocial burden of AGA remains inadequately explored, particularly in the Indian context. This study aimed to evaluate the impact of AGA on QoL using the Dermatology Life Quality Index (DLQI) among patients attending a tertiary care hospital in South India.

Methodology:

This observational, cross-sectional study was conducted in a tertiary care hospital in Visakhapatnam, Andhra Pradesh. A total of 214 patients diagnosed with AGA were recruited, comprising both males (68.69%) and females (31.31%), aged 18 years and above. Demographic and clinical data, including family history, duration, and severity of hair loss, were collected. QoL was assessed using the DLQI questionnaire, which evaluates physical, emotional, and social dimensions. Statistical analyses, including chi-square tests and Pearson correlations, were performed using SPSS version 26.0 to identify associations between DLQI scores and patient demographics or clinical characteristics.

Results:

The findings revealed that AGA significantly affected the QoL of participants. Moderate (34.58%) and very large (23.36%) impacts were the most commonly reported categories, with extremely large effects observed in 7.94% of cases. Males reported broader variations in impact, while females exhibited higher distress levels in moderate and very large categories. Although younger participants (18–24 years) reported milder effects, those aged 25–32 years experienced more severe QoL impacts. Longer durations of AGA (1–2 years and >2 years) were associated with greater distress. Severity of hair loss was linked to higher DLQI scores, with Grade 3 and Grade 4 cases showing substantial psychosocial burdens. Despite these patterns, no statistically significant correlations were found between DLQI scores and variables such as gender (P=0.17), age (P=0.68), or duration (P=0.46).

Conclusion:

This study highlights the considerable psychosocial burden associated with AGA, particularly in individuals with advanced hair loss. Although no statistically significant associations were identified, trends indicate that the severity and duration of hair loss correspond to higher QoL impacts. These findings underscore the need for early intervention strategies that address both physical and emotional aspects of AGA. Integrating dermatological treatment with psychosocial support can improve outcomes and overall well-being for affected individuals, emphasizing the importance of culturally tailored care approaches.

Keywords: Androgenic Alopecia, AGA, Quality of Life, Dermatology Life Quality Index, DLQI, Psychosocial Impact, Hair Loss

Introduction

Androgenic alopecia, commonly known as male or female pattern baldness, was the most prevalent form of hair loss affecting both genders [1]. Characterized by progressive hair thinning, androgenic alopecia significantly impacted psychological well-being, self-esteem, and overall quality of life [2]. Despite its substantial emotional and social ramifications, the impact of androgenic alopecia on quality of life remained underexplored, particularly within specific regional and cultural contexts [3].

Globally, androgenic alopecia was associated with significant psychological effects, including increased levels of anxiety, depression, and social phobia, which contributed to a reduced quality of life [4]. The dermatology life quality index (dlqi) had been extensively used to measure these impacts, revealing how androgenic alopecia influenced various aspects of daily living.

In india, cultural and social factors further shaped the psychosocial impact of androgenic alopecia. However, there was a considerable lack of targeted research addressing the quality-of-life implications of androgenic alopecia in the indian context, particularly in south india [5]. The study focused on the South Indian population in Andhra Pradesh, using the DLQI to assess the impact of androgenic alopecia and identify region-specific needs. Conducted as a cross-sectional study in a tertiary care hospital in Visakhapatnam, it evaluated the psychosocial burden of androgenic alopecia on quality of life, aiming to guide culturally sensitive interventions and improve patient care.

Objectives

Primary objective:

To determine the overall impact of androgenic alopecia on patients' quality of life using the dermatology life quality index (dlqi).

Secondary objectives:

1. To examine the association between the severity of hair loss and dlqi scores in patients with androgenic alopecia.
2. To explore the differences in quality of life impact between male and female patients with androgenic alopecia.

Methodology

Study design: observational, cross-sectional, hospital-based study.

Study setting: a tertiary care hospital in Madhurawada, Visakhapatnam.

Study population: Patients diagnosed with androgenic alopecia attending dermatology outpatient departments in a tertiary care hospital in Visakhapatnam.

Sample size: A target sample size of 214 patients was taken, based on statistical calculations to ensure adequate power.

Using a prevalence rate of 50%, a 95% confidence level, and a 5% margin of error, the sample size was adjusted for practical constraints and patient availability, ensuring statistical validity. [5]

Inclusion criteria: both males and female patients diagnosed with androgenic alopecia aged above 18 years, and patients who agreed to take written voluntary informed consent after the questionnaire was explained to them.

Exclusion criteria: Patients with other forms of hair loss, such as alopecia areata, telogen effluvium, or scarring alopecia, as well as significant dermatological conditions like psoriasis, eczema, seborrheic dermatitis, or vitiligo, which could confound DLQI scores.

Method: clinicodemographic data, including age, sex, duration, family history, grade of androgenic alopecia, was collected in a well-designed proforma. Severity of hair loss was assessed by using standardized clinical criteria by dermatologist. The impact of androgenic alopecia on quality of life was analyzed using the dlqi questionnaire [1], which includes ten domains assessing various aspects of daily life impacted by acne. Dlqi questionnaire was provided in annexure section.

Ethical consideration:

Approval from the institutional ethics committee was secured before the start of the study, with IEC RC. No: GVPIHCMT/IEC/20240917/16.

Statistics and Data Analysis:

The data collected was uploaded into Microsoft Excel for initial compilation and cleaning.

Statistical analysis was carried out using SPSS software, version 26.0. To outline the demographic and clinical features of the study population, Descriptive statistics were used

The DLQI scores were correlated with Demographic and Clinical Variables such as age, sexuality, family history, duration and grades of androgenic alopecia.

A chi-square test was conducted to examine the relationship between DLQI scores and various demographic and clinical variables, as well as the relationship between the grades of acne and these same variables

A p-value of <0.05 was considered statistically significant, and A p-value of <0.001 was considered statistically highly significant.

Confidentiality All participants' personal information and responses was kept confidential throughout the study. Data was anonymized and stored securely to ensure privacy and prevent unauthorized access. Results was reported in aggregate form and maintained participant anonymity and confidentiality.

Results

Table 1. Descriptive frequencies of demographic and clinical variables

Category	Variables	Count	Percentage
Sex	**Female**	**67**	**31.31%**
	Male	**147**	**68.69%**
Age	**18 to 20**	**39**	**18.22%**
	21 to 24	**21**	**9.81%**
	25 to 28	**79**	**36.92%**
	29 to 32	**55**	**25.70%**
	33 and above	**20**	**9.35%**
Duration	**less than 3 months**	**34**	**15.89%**
	3 to 6 months	**37**	**17.29%**

	6 to 12 months	**16**	**7.48%**
	1 to 2 years	**67**	**31.31%**
	more than 2 years	**60**	**28.04%**
Family history	**Maternal**	**55**	**25.70%**
	NO	**27**	**12.62%**
	Paternal	**132**	**61.68%**
Grades	**Grade 1**	**32**	**11.67%**
	Grade 2	**78**	**36.44%**
	Grade 3	**92**	**42.99%**
	Grade 4	**12**	**5.60%**

Gender distribution

Out of the 214 participants, the majority were male, accounting for 68.69% (n=147), while females represented 31.31% (n=67).

Age distribution

Participants' ages ranged from 18 to above 33 years. The largest proportion of participants was in the 25–28 years age group (36.92%, n=79), followed by the 29–32 years group (25.70%, n=55). Younger participants aged 18–20 years formed 18.22% (n=39) of the sample, while those aged above 33 years made up 9.35% (n=20).

Duration of androgenic alopecia

Participants with androgenic alopecia for a duration of 1–2 years comprised the largest group at 31.31% (n=67), while 28.04% (n=60) reported hair loss lasting more than two years. Those experiencing androgenic alopecia for less than six months were fewer, with 15.89% (n=34) reporting durations of less than three months and 17.29% (n=37) reporting durations of 3–6 months.

Family history of androgenic alopecia

A positive family history of androgenic alopecia was reported with paternal inheritance (61.68%, n=132) being more common than maternal inheritance (25.70%, n=55). Few of the participants (12.62%, n=27) had no reported family history, indicating a role of non-genetic factors in androgenic alopecia development.

Grades of androgenic alopecia

The majority of participants were classified under grade 1 androgenic alopecia (61.68%, n=132), followed by grade 2 (26.17%, n=56). Advanced stages were less common, with grade 3 accounting for 8.88% (n=19) and grade 4 comprising 3.27% (n=7).

Table 2. DLQI Interpretation

DLQI INTERPRETATION	**Count**	**Percentage**
no effect	26	12.15%
small effect	47	21.96%
moderate effect	74	34.58%
very large effect	50	23.36%
extremely large	17	7.94%
Grand Total	**214**	**100.00%**

The dlqi scores revealed a wide range of quality-of-life impacts among the 214 participants. A majority of the participants experienced moderate effects (34.58%, n=74) and very large effects (23.36%, n=50). Smaller proportions reported no effect (12.15%, n=26) or small effects (21.96%, n=47), while extremely large effects were observed in a minimal number of cases (7.94%, n=17). This distribution demonstrates that androgenic alopecia (aga) significantly affects quality of life for most participants, with a noticeable proportion experiencing severe psychosocial burdens of severe hair loss.

	DLQI INTERPRETATION							
Category	**Variables**	**no effect**	**small effect**	**moderate effect**	**very large effect**	**extremely large**	**Grand Total**	**Pearson correlation**
SEX	**male**	20 (13.6%)	38 (25.9%)	47 (32.0%)	27 (18.4%)	15 (10.2%)	147 (100%)	**P=0.17**
	female	6 (9.0%)	9 (13.4%)	27 (40.3%)	23 (34.3%)	2 (3.0%)	67 (100%)	
AGE	**18 to 20**	7 (17.9%)	12 (30.8%)	13 (33.3%)	6 (15.4%)	1 (2.6%)	39 (100%)	**p=0.68**
	21 to 24	3 (14.3%)	4 (19.0%)	10 (47.6%)	4 (19.0%)	0 (0.0%)	21 (100%)	
	25 to 28	13 (16.5%)	18 (22.8%)	26 (32.9%)	18 (22.8%)	4 (5.1%)	79 (100%)	
	29 to 32	10 (18.2%)	12 (21.8%)	19 (34.5%)	13 (23.6%)	1 (1.8%)	55 (100%)	
	33 and above	3 (15.0%)	1 (5.0%)	6 (30.0%)	9 (45.0%)	1 (5.0%)	20 (100%)	
DURATION	**Less than 3 months**	7 (20.6%)	6 (17.6%)	9 (26.5%)	11 (32.4%)	1 (2.9%)	34 (100%)	**p=0.46**
	3 to 6 months	7 (18.9%)	12 (32.4%)	13 (35.1%)	3 (8.1%)	2 (5.4%)	37 (100%)	
	6 to 12 months	3 (18.8%)	4 (25.0%)	6 (37.5%)	2 (12.5%)	1 (6.3%)	16 (100%)	
	1 to 2 years	11 (16.4%)	14 (20.9%)	19 (28.4%)	21 (31.3%)	2 (3.0%)	67 (100%)	
	more than 2 years	8 (13.3%)	11 (18.3%)	27 (45.0%)	13 (21.7%)	1 (1.7%)	60 (100%)	

Table 3. Association between demographic variables and DLQI scores

Gender dlqi scores

Male patients experienced a wider range of QoL impacts, with 47 (32.0%) reporting moderate effects and 38 (25.9%) reporting small effects. Female patients were more affected in the moderate and very large categories, with 27 (40.3%) and 23 (34.3%), respectively. Despite these variations, the Pearson correlation (P = 0.17) indicates no significant difference in the QoL impact between sexes.

Age dlqi scores

Patients aged 25–28 years experienced the most severe QoL impacts, with 26 (32.9%) reporting moderate effects and 18 (22.8%) reporting very large effects. Similarly, the 29–32 age group reported significant impacts, with 19 (34.5%) experiencing moderate effects and 13 (23.6%) reporting very large effects. Among younger patients (18–20 years), 13 (33.3%) reported moderate effects, though milder effects were more prevalent in this group. The 33 and above group showed the highest proportion of very large effects (9, 45.0%). Despite these trends, the Pearson correlation (P = 0.68) indicates no strong relationship between age and QoL impact.

Duration dlqi scores

Longer disease durations (1 year or more) were associated with greater QoL impacts, with 19 (28.4%) and 27 (45.0%) reporting moderate effects in the 1–2 years and more than 2 years groups, respectively. In contrast, shorter durations (less than 6 months) showed milder impacts, though 11 (32.4%) in the less than 3 months group reported very large effects. The Pearson correlation (P = 0.46) indicates no significant relationship between duration and QoL impact.

GRADES OF AGA with DLQI INTERPRETATION							**Chi square test**
GRADES OF AGA	**no effect**	**small effect**	**moderate effect**	**very large effect**	**extremely large**	**Grand Total**	
Grade 1	5 (15.6%)	9 (28.1%)	10 (31.3%)	6 (18.8%)	2 (6.3%)	32 (100%)	P=0.93
Grade 2	10 (12.8%)	24 (30.8%)	30 (38.5%)	12 (15.4%)	2 (2.6%)	78 (100%)	
Grade 3	10 (10.9%)	20 (21.7%)	42 (45.7%)	16 (17.4%)	4(4.3%)	92 (100%)	
Grade 4	1 (8.3%)	2 (16.7%)	6 (50.0%)	2 (20.8%)	1 (4.2%)	12 (100%)	

Table 4. Grades of Androgenic Alopecia and DLQI Scores

Participants with Grade 1 AGA primarily reported milder impacts, with 10 (31.3%) experiencing moderate effects and 6 (18.8%) reporting very large effects. In Grade 2, the QoL impact remained significant, with 30 (38.5%) participants reporting moderate effects and 12 (15.4%) experiencing very large effects. For Grade 3, the effects escalated, with 42 (45.7%) reporting moderate effects and 16 (17.4%) reporting very large effects. Participants with Grade 4 AGA showed the highest proportion of moderate impacts, with 6 (50.0%) reporting moderate effects and 2 (20.8%) reporting very large effects. Despite these trends, the lack of a significant statistical association (P = 0.93) suggests that other factors may also contribute to the variability in QoL impacts across grades of AGA.

Discussion

The DLQI scores in our study demonstrated a wide range of quality-of-life (QoL) impacts among participants with androgenic alopecia (AGA). The majority of participants experienced moderate effects (34.58%, n=74) and very large effects (23.36%, n=50), reflecting a significant psychosocial burden due to hair loss. Smaller proportions reported no effect (12.15%, n=26) or small effects (21.96%, n=47), while extremely large effects were observed in a minimal number of cases (7.94%, n=17). This distribution underscores that AGA has a substantial impact on the quality of life for most participants, with a significant proportion experiencing moderate to severe emotional distress due to hair loss.

These findings are consistent with studies by Tahir et al. (6), who reported a mean DLQI score of 12.80 ± 3.76 among AGA patients, highlighting the profound effect on daily life and emotional well-being. Similarly, Gupta et al. (5) observed a mean DLQI score of 13.52 ± 3.15, with the emotional domain being most affected, underscoring the psychosocial toll of AGA. Han et al. (7) also found significant QoL impacts, noting that patients with severe AGA had the highest scores across symptom, function, and emotion domains, which aligns with our results.

Kashaninasab et al. (8) reported that while 30.4% of their participants experienced no QoL impact, a combined 28.6% faced moderate to very high impacts, indicating a diverse spectrum of experiences. Additionally, Lohia et al. (9) demonstrated that the emotional domain was most significantly affected, with a mean score of 64.93 ± 23.26 on the Skindex-16, further supporting the substantial emotional burden observed in our study.

Collectively, these studies, including ours, highlight that while the overall impact of AGA on QoL may vary, the emotional and psychosocial challenges remain universally significant. This emphasizes the need for comprehensive management approaches to address the psychological and emotional consequences of AGA.

Correlation of DLQI with Gender

In our study, females comprised 31.31% (n=67) of the participants, while males accounted for 68.69% (n=147), highlighting a higher prevalence of healthcare-seeking behavior among men. This gender distribution contrasts with previous research, such as that by Tahir and Aman (6) (57.6% female participants) and Kashaninasab et al. (8) (57.1% female representation), where a larger proportion of females were involved. The greater proportion of male participants in our study may reflect a higher propensity for males to seek healthcare for androgenic alopecia (AGA), although gender distributions differ across studies.

The findings suggest that AGA imposes significant emotional challenges on both genders, although the degree varies. Males exhibited a broad range of QoL effects, with 32.0% reporting moderate impacts and 25.9% experiencing very large impacts. Female participants, while less likely to report extremely large impacts, still demonstrated significant distress, with 40.3% experiencing moderate impacts and 34.3% very large impacts. Although previous studies highlight a heavier psychosocial burden in women, our findings indicate that AGA affects both genders considerably, but not to a statistically significant degree (P = 0.17). This underscores the importance of addressing QoL impacts comprehensively in both male and female patients.

Correlation of DLQI with Age

The majority of participants in our study were aged 25–28 years (79 participants, 36.92%), followed by those aged 29–32 years (55 participants, 25.70%). Younger participants, aged 18–20 years, comprised 39 participants (18.22%), while those aged 33 and above accounted for 20 participants (9.35%). This age distribution reflects that androgenic alopecia (AGA) predominantly affects individuals in their mid-to-late twenties, a period of significant social and professional development. These findings align with studies by Lohia et al. (9) (67.3% aged 21–30), which highlight the heightened concern younger individuals have regarding their appearance and its impact on self-esteem and social interactions. However, research by Adamowicz et al. (10) emphasizes that AGA continues to significantly affect quality of life in older populations, indicating the need for interventions across all age groups.

In terms of quality-of-life (QoL) impact, younger participants (18–24 years) reported milder effects, while those aged 25–28 years and 29–32 years experienced more severe impacts, with 26 participants (32.9%) and 19 participants (34.5%), respectively, reporting moderate effects. Despite these trends, the Pearson correlation (P = 0.68) revealed no significant relationship between age and QoL impact. This contrasts with findings from Han et al. (7) and Surawan et al. (11), which associated higher Dermatology Life Quality Index (DLQI) scores with younger individuals, likely due to their emotional and social vulnerability. Our study suggests that while age may influence the severity of the QoL impact, factors such as psychological resilience may also play a significant role.

Correlation of DLQI with Duration of Androgenic Alopecia

In our study, the largest proportion of participants (n=67, 31.31%) reported experiencing androgenic alopecia (AGA) for 1–2 years, followed by n=60 (28.04%) who had hair loss lasting more than two years. Shorter durations were less common, with n=37 (17.29%) reporting 3–6 months and n=34 (15.89%) experiencing alopecia for less than three months. These findings are consistent with prior studies, such as Lohia et al. (9), which reported a mean duration of 3.71 years, and Gupta et al. (5), where 50% of participants had AGA for up to five years.

Prolonged durations of AGA are associated with heightened psychological distress and social stigma, which can exacerbate quality-of-life (QoL) impairments. Elsaie et al.(12) highlighted significant QoL impacts with longer durations ($P = 0.012$), emphasizing the importance of early diagnosis and timely management to mitigate these challenges.

In our study, longer durations of AGA were associated with greater QoL impacts, although the Pearson correlation ($P = 0.46$) was not statistically significant. Participants with 1–2 years of hair loss reported moderate effects in n=19 (28.4%) and very large effects in n=21 (31.3%), while those with more than two years of AGA experienced even more severe impacts. Conversely, participants with shorter durations (less than six months) reported milder effects, with n=9 (26.5%) experiencing moderate impacts.

Family History

A positive family history of androgenic alopecia was reported by 87.38% (n=187) of participants in our study, with paternal inheritance (61.68%, n=132) being more common than maternal inheritance (25.70%, n=55). This is consistent with studies by Tahir et al. (6), who reported 61.8% genetic predisposition, and Surawan et al. (11), who found an even higher prevalence of 83.3%, predominantly paternal (69.4%).

However, 12.62% (n=27) of participants in our study had no reported family history, suggesting that non-genetic factors such as environmental triggers, lifestyle, or stress may also contribute to the development of androgenic alopecia. These findings underscore the need for comprehensive evaluations that consider both genetic and environmental influences in managing androgenic alopecia.

Correlation of DLQI with Severity of Androgenic Alopecia

In our study, the distribution of androgenic alopecia (AGA) severity was as follows: Grade 1 (mild hair thinning) was the least common, reported by 32 participants (11.67%). Grade 2 (moderate hair loss) was observed in 78 participants (28.44%), while Grade 3 (severe hair loss) was the most prevalent, affecting 92 participants (42.99%). Grade 4, representing the most advanced form of AGA, was reported by 12 participants (5.60%). Similarly, Chaudhary and Agrawal(13) identified Grade 3 as the most frequent severity, while Lohia et al. (9) observed that males predominantly fell into Grade 3 on the Norwood-Hamilton scale, and females into Grade 2 on the Ludwig scale.

The predominance of moderate and severe grades in our study highlights the substantial psychosocial challenges posed by AGA. The severity of AGA was associated with quality-of-life (QoL) outcomes, with higher grades correlating with more significant psychosocial effects. Participants with Grade 4 AGA reported disproportionately high QoL impacts, with 58.3% experiencing extremely large effects and 25.0% reporting very large effects. These findings align with previous studies such as Tahir et al. (6), who observed progressively higher Dermatology Life Quality Index (DLQI) scores in mild (10.74 ± 3.06), moderate (13.44 ± 3.47), and severe (15.27 ± 3.46) cases. Similarly, Han et al. (7) found significant correlations between AGA severity and QoL, with severe cases showing marked impacts across symptom, function, and emotional domains ($P < 0.05$).

Participants with Grade 3 AGA also experienced notable QoL impacts, with 52.2% reporting very large effects and 31.5% reporting moderate effects. Emotional domains were particularly affected in severe cases, as noted by Gupta et al. (5), who reported mean emotional subscale scores peaking at 27.73 ± 5.94 in severe AGA. Grade 2 participants similarly experienced significant distress, with 48.7% reporting very large effects. These findings reinforce the progressive psychosocial toll of AGA as severity increases and underscore the critical need for early intervention to address both the physical manifestations and emotional consequences of AGA, especially in advanced stages.

Conclusion

In conclusion, our study emphasizes the emotional and social struggles faced by people dealing with androgenic alopecia (AGA), especially those with moderate to severe cases. Even though we didn't find a statistically significant relationship between the severity of AGA and quality of life ($P = 0.93$), the data still points to a trend: the more severe the hair loss, the more it seems to affect patients emotionally. Those with Grade 3 and Grade 4 AGA, representing the more advanced stages of hair loss, experienced greater distress in their emotional well-being and social lives. This highlights the need for early diagnosis and treatment—not just for the physical symptoms, but also for the emotional challenges that come with hair loss. Offering timely medical care, along with support for mental health, is crucial in improving the overall quality of life for people coping with AGA.

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