

Comparison of Dermatology Life Quality Index Scores in Adults and Adolescents With Alopecia Areata

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BACKGROUND

- Alopecia areata (AA) is an autoimmune disease characterized by nonscarring hair loss of the scalp, face, and/or body
- Individuals with AA may report anxiety, depression, embarrassment, or low self-esteem, and may avoid social settings due to fear of judgement or unwanted attention^{1,2}
- Although hair loss due to AA can negatively affect quality of life among people of all ages, adolescents may be particularly susceptible to its psychosocial impacts³
- The Dermatology Life Quality Index (DLQI), a self-administered questionnaire that captures emotional, psychological, and function dimensions of the impact of skin disease on quality of life over the past 7 days, is the most widely used tool to assess the impact of dermatological conditions on health-related quality of life^{4,5}

OBJECTIVE

- To assess DLQI scores among adults and adolescents who experience their first episode of $\geq 50\%$ scalp hair loss due to AA and to compare those impacts by age

METHODS

Study design and patient population

- This was a retrospective medical record review conducted in France, Germany, Spain, and the United Kingdom
- Medical record review was led by dermatologists experienced in managing patients with AA

Patients were eligible for inclusion who:

- had a diagnosis of AA with $\geq 50\%$ scalp hair loss
 - were aged ≥ 12 years at index
 - had ≥ 6 months of available post-index follow-up
 - were receiving ongoing treatment for AA at index or initiating new treatment within 60 days post-index
 - had ≥ 1 post-index clinic visit with recorded percent scalp hair loss
 - did not have other types of alopecia, diseases causing hair loss, or scalp diseases interfering with assessments
 - had a recorded DLQI score at their first observed episode of $\geq 50\%$ scalp hair loss due to AA
- The index date was defined as the first observed date of de novo or progression to $\geq 50\%$ scalp hair loss, occurring between January 1, 2015, and December 31, 2019

Outcomes

- The DLQI consists of 10 questions regarding symptoms and feelings, daily activities, leisure, work and school, personal relationships, and treatment

- Each item is scored on a scale of 0-3 points; scores are added for total DLQI score of 0-30 points, with higher scores indicating greater impact on quality of life

Total DLQI scores were categorized by their impact on quality of life:

- 0-1 = no effect
- 2-5 = small effect
- 6-10 = moderate effect
- 11-20 = very large effect
- 21-30 = extremely large effect

Statistical analysis

- Analyses were stratified by age group (adults ≥ 18 years, adolescents 12-17 years) and described using descriptive statistics and standardized mean differences to assess baseline characteristic balance

- Analysis 1:** multivariable linear regression estimated the mean difference in DLQI score between age groups (adolescents vs. adults) while adjusting for potential confounding confounders by including the following covariates:

- Country
- Sex
- Race
- AA type
- SALT score at index
- Scalp hair loss $\geq 50\%$ at diagnosis
- Eyebrow involvement
- Eyelash involvement
- Index year
- Presence of concomitant dermatologic conditions
- Presence of comorbid anxiety
- Presence of comorbid depression

- Analysis 2:** DLQI scores were categorized into three groups (*none to moderate effect*, *very large effect*, *extremely large effect*) and relative risks (RRs) with 95% CI between age group and DLQI category were estimated using modified Poisson regression analyses

- Models compared the RR of being in the *very large effect* and the *extremely large effect* categories versus the *none to moderate effect* category, adjusting for the same covariates as Analysis 1; two-sided *P* values < 0.05 were considered statistically significant

RESULTS

Patient characteristics

- At index, adults had more extensive scalp hair loss than adolescents, with mean (SD) SALT scores of 63.7 (15.5) for adults and 60.4 (12.8) for adolescents; 20.9% of adults had alopecia totalis (complete loss of scalp hair) and/or alopecia universalis (complete loss of scalp, face, and body hair) vs 11.6% of adolescents (**Table 1**)
- Anxiety was present/ongoing in 20.9% of adults and 25.6% of adolescents, while depression was present/ongoing in 12.4% of adults and 3.5% of adolescents (**Table 1**)

Table 1. Patient demographics and clinical characteristics

	Overall (N=335)	Adults (N=249)	Adolescents (N=86)	Difference*
Country, n (%)				0.74
France	23 (6.9)	23 (9.2)	0 (0)	
Germany	92 (27.5)	75 (30.1)	17 (19.8)	
Spain	86 (25.7)	71 (28.5)	15 (17.4)	
United Kingdom	134 (40.0)	80 (32.1)	54 (62.8)	
Year of study index date, n (%)				0.6
2015	48 (14.3)	26 (10.4)	22 (25.6)	
2016	55 (16.4)	38 (15.3)	17 (19.8)	
2017	87 (26.0)	62 (24.9)	25 (29.1)	
2018	79 (23.6)	70 (28.1)	9 (10.5)	
2019	66 (19.7)	53 (21.3)	13 (15.1)	
Age at study index date, years				2.3
Mean (SD)	29.2 (13.2)	34.1 (11.8)	15.0 (11.5)	
Sex, n (%)				0.39
Female	204 (60.9)	140 (56.2)	64 (74.4)	
Male	131 (39.1)	109 (43.8)	22 (25.6)	
Race/ethnicity, n (%)				0.37
African/Black	23 (6.9)	17 (6.8)	6 (7.0)	
East Asian	21 (6.3)	16 (6.4)	5 (5.8)	
South Asian	16 (4.8)	11 (4.4)	5 (5.8)	
Middle Eastern	16 (4.8)	13 (5.2)	3 (3.5)	
Multi-race/ethnicity	16 (4.8)	10 (4.0)	6 (7.0)	
White/Caucasian	237 (70.7)	181 (72.7)	56 (65.1)	
Other/unknown	6 (1.8)	1 (0.4)	5 (5.8)	
Patients presenting with $\geq 50\%$ SALT at index, n (%)				0.15
No (diagnosis date < index date)	99 (29.6)	78 (31.3)	21 (24.4)	
Yes (diagnosis date = index date)	236 (70.4)	171 (68.7)	65 (75.6)	
AA type at index, n (%)				0.3
Alopecia totalis	39 (11.6)	31 (12.4)	8 (9.3)	
Alopecia universalis	23 (6.9)	21 (8.4)	2 (2.3)	
Patchy Alopecia	273 (81.5)	197 (79.1)	76 (88.4)	
SALT score at index, n (%)				0.23
Mean (SD)	62.9 (14.9)	63.7 (15.5)	60.4 (12.8)	
Median (IQR)	56.0 (16.0)	56.0 (18.0)	55.5 (8.8)	
Range	50.0-100.0	50.0-100.0	50.0-100.0	
Other sites of hair loss/involvement at index, n (%)				0.04
Eyebrows	141 (42.1)	106 (42.6)	35 (40.7)	
Eyelashes	110 (32.8)	82 (32.9)	28 (32.6)	0.01
Comorbidities present / ongoing at index, n (%)				0.11
Anxiety	74 (22.1)	52 (20.9)	22 (25.6)	
Sleep disorder	10 (3.0)	10 (4.0)	0 (0)	0.29
Depression	34 (10.1)	31 (12.4)	3 (3.5)	0.34
Any Dermatologic Condition [†]	43 (12.8)	36 (14.5)	7 (8.1)	0.21

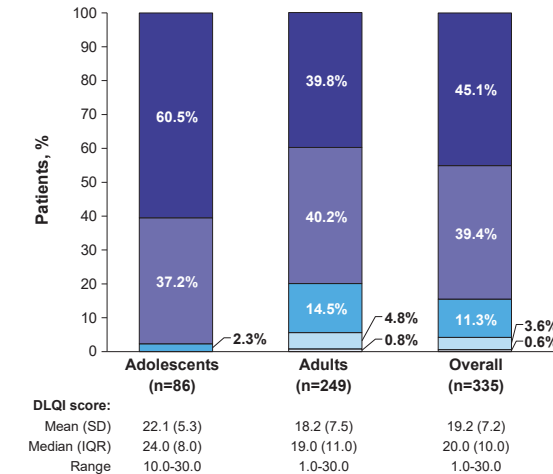
*Standardized Mean Difference. †Unknown in 7 patients; proportion out of patients with non-missing data. ‡Dermatologic conditions include atopic dermatitis, psoriasis, systemic lupus erythematosus, and vitiligo. AA, alopecia areata; IQR, interquartile range; SALT, Severity of Alopecia Tool; SALT, scalp hair loss; SD, standard deviation.

DLQI scores at index

- At index, the mean (SD) DLQI scores were 18.2 (7.5) in adults and 22.1 (5.3) in adolescents (**Figure 1**)
- Overall, 84% of patients had a DLQI score indicating a very large or extremely large impact on their lives (**Figure 1**)
- This was especially pronounced among adolescents (98%)

Figure 1. DLQI scores at index

- Extremely large effect on the patient's life
- Very large effect on the patient's life
- Moderate effect on the patient's life
- Small effect on the patient's life
- No effect at all on the patient's life



DLQI scores were categorized as scores 0-1 = no effect at all, scores 2-5 = small effect, scores 6-10 = moderate effect, scores 11-20 = very large effect, and scores 21-30 = extremely large effect. DLQI, Dermatology Life Quality Index; IQR, interquartile range; SD, standard deviation.

Impact of age group on DLQI score

- In the multilinear regression model, adolescents had significantly higher DLQI scores than adults ($\beta=3.51, P<0.001$), indicating a 3.51-point increase in DLQI score associated with being an adolescent (**Table 2**)

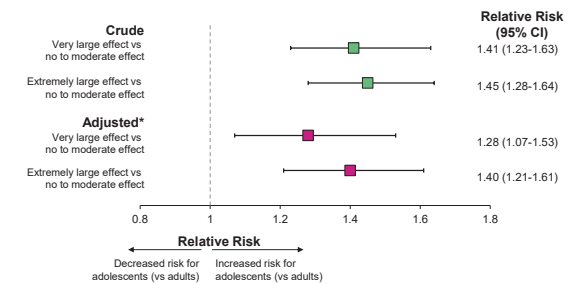
Table 2. Crude and adjusted linear regression results: impact of age group on DLQI scores

Model	Predictor	Estimate (β)	Standard Error	<i>P</i>
Crude	Age group (adolescents vs. adults)	3.861	0.872	<0.001
	Age group (adolescents vs. adults)	3.51	0.818	<0.001

*Adjusted for country, sex, race, alopecia areata type, Severity of Alopecia Tool score at index, scalp hair loss $\geq 50\%$ at diagnosis, eyebrow involvement, eyelash involvement, index year, concomitant dermatologic conditions, comorbid anxiety, and comorbid depression. DLQI, Dermatology Life Quality Index.

- The RR of having a DLQI score indicating a very large effect or extremely large effect relative to no or moderate effect was significantly higher for adolescents vs adults (**Figure 2**)

Figure 2. Impact of age group on DLQI score categories



*Adjusted for country, sex, race, alopecia areata type, Severity of Alopecia Tool score at index, scalp hair loss $\geq 50\%$ at diagnosis, eyebrow involvement, eyelash involvement, index year, concomitant dermatologic conditions, comorbid anxiety, and comorbid depression.

DISCUSSION & LIMITATIONS

- Previous studies have reported lower DLQI scores among patients with AA, although these studies included patients with $< 50\%$ scalp hair loss.^{5,7,8} A study of patients with AA in Japan also found lower DLQI scores; in this study, only 30% of the 33 patients with $\geq 50\%$ scalp hair loss had DLQI scores indicating very or extremely large effects⁹
- In the current analysis, DLQI scores were captured at the moment of experiencing 50% or greater scalp hair loss, which may have contributed to the higher scores
- The cross-sectional nature of the data limits the ability to infer causal relationships between age and quality of life
- The DLQI has not been validated for AA, and it explicitly refers to skin in all its items, which may bias responses toward lower impact scores
- The Poisson regression results should be interpreted with caution due to imprecision of the estimates, as evidenced by wide confidence intervals, arising from sparse data in the reference category
- These data were collected prior to the approval of new treatments (baricitinib, riticitinib, and deuruxolitinib) that could improve quality of life in patients with severe AA

CONCLUSIONS

- This study demonstrates that based on the DLQI, both adults and adolescents with AA at the time of experiencing $\geq 50\%$ scalp hair loss experience significant impacts on their quality of life
- The impact of AA on quality of life was large or extremely large for nearly all (98%) adolescents
- Further studies are needed to assess changes in DLQI over time and in response to treatment, and its correlation with extent of hair loss
- These findings underscore the need for effective treatments for both adults and adolescents with AA

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DISCLOSURES

This study was funded by Pfizer Inc. BH Law, H Tran, and L Napatalung report employment with and stock ownership in Pfizer Inc. At the time of this analysis, KA Hanson served as a consultant to Pfizer and received compensation for these services. KL Davis and L Esterberg report employment with RTI Health Solutions, which received contract research funding from Pfizer, Inc. for the conduct of this study. A Messenger and S Vañó-Galván report consultancy fees from Pfizer Inc in relation to the conduct of this study.

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