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# Alopecia areata in the United States: a ten-year analysis of patient characteristics, comorbidities, and treatment patterns

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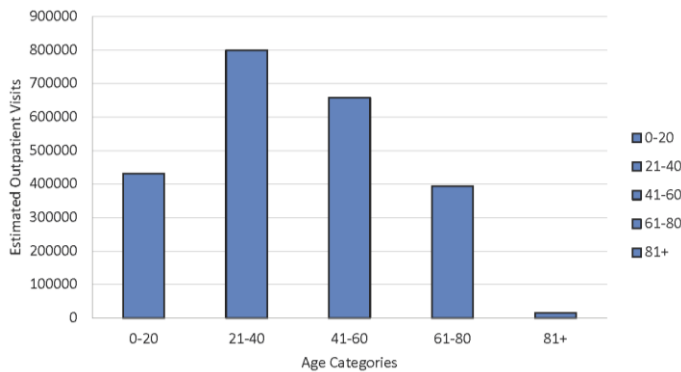
To the Editor:

Alopecia areata (AA) is an inflammatory, autoimmune-mediated condition characterized by patchy hair loss commonly affecting the scalp [1]. Alopecia areata prevalence is reported to be 2% worldwide, whereas prevalence in the United States (U.S.) is estimated at 2.5% [2,3]. There is a paucity of epidemiological studies examining AA in the U.S. over the last decade. This study sought to analyze patient characteristics, comorbidities, and medication prescribing patterns of patients seen for AA from 2006 to 2016.

We conducted a cross-sectional, population-based analysis from 2006 to 2016 using the National Ambulatory Medical Care Survey (NAMCS). The National Ambulatory Medical Care Survey is a publicly available, nationwide survey conducted annually by the Centers for Disease Control and Prevention. The NAMCS database is a nationally representative sample of ambulatory medical care services in the U.S. Visit weights are projections derived from NAMCS estimation procedures, which incorporate derived annual estimates, adjusting for nonresponse, ratio adjustment within specialties, and accounting for extremes in final weights.

Notably, *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD9) codes were employed from 2006 to 2015 while *International Classification of Diseases, Tenth Revision, Clinical Modification* (ICD10) codes were employed in the 2016 survey. Our analysis included the diagnosis codes of 704.01 (ICD9) and L63.9 (ICD10) to identify patient visits for AA. In addition, we extracted medications prescribed for AA and evaluated associated conditions. For associated conditions, we reexamined conditions in which both AA and the associated diagnoses were among the top five diagnoses linked to the visit.

During the ten-year study period (2006 to 2016), there were a total of 2,298,432 (95% confidence interval [CI] 1.9- 2.6 million) weighted visits for AA ([Table 1](#)). Female patients accounted for most outpatient visits for AA (65%). The average age of patients was 37.8±18.04 years. Specifically, individuals aged 21 to 40 years were twice as likely to be seen for AA (P=0.03) and comprised 35% of all visits ([Figure 1](#)). Patients saw dermatologists more frequently for an AA visit compared to primary care physicians (PCP; family medicine, internal medicine, and pediatrics), (P<0.001). Specifically, dermatologists performed 78% of AA visits whereas PCPs performed 7% of visits ([Table 1](#)).



**Figure 1.** Age distribution of patients seen in ambulatory care clinics for alopecia areata in the United States from 2006 to 2016.

Of the over two million visits for AA, the top three associated diagnoses were depression, seborrheic dermatitis, and thyroid disorders. Specifically, 4.3% of patient visits for AA were associated with depression, 3.5% with seborrheic dermatitis, and 3.1% with thyroid disorders. Individuals with AA seen by dermatologists were 28.4 (CI 8.5-94.5) times more likely to have a concomitant diagnosis of seborrheic dermatitis than those without AA seen by dermatologists ( $P < 0.001$ , [Table 1](#)). Treatments for AA included topical corticosteroids (TCS), (34%), intralesional triamcinolone (24.7%), and minoxidil (5.8%). Notably, 9.3% of visits were associated with both TCS and intralesional triamcinolone treatment.

This study showed that AA predominantly affects younger adults in the U.S. For example, individuals aged 21-40 years represented the largest group (35%) affected by AA. Additionally, there was a preponderance of females (65%) seen for AA during the study years. A recent systematic review found no clear predilection based on sex but did report population studies have shown a predominance of AA in females [4].

Our analysis revealed that TCS are the most common (34%) first-line treatment for AA. Typically, the mainstay of treatment for AA includes TCS with or without adjunct intralesional triamcinolone injection [5]. Depending on disease severity, intralesional triamcinolone may help accelerate hair regrowth [5]. All individuals who were seen for AA and treated with both TCS and intralesional triamcinolone were seen by dermatologists. Additionally, systemic

medications such as oral corticosteroids, methotrexate, and cyclosporine were not commonly used for the treatment of AA. The varying disease severity and potential for relapse of AA highlights the need for experienced dermatologists to care for this population [5].

Regarding comorbid conditions, seborrheic dermatitis was more commonly associated among individuals with AA seen by dermatologists (3.5%) compared to individuals without AA seen by dermatologists (0.9%). Although this association has not been well established, stress has been suggested as a trigger and sequelae for both conditions [6,7]. Therefore, the concomitant presentation of seborrheic dermatitis and AA could be seen in patients undergoing recent stress. Additionally, 4.3% of visits for AA were associated with a diagnosis of depression. Psychiatric diagnoses such as depression and anxiety have previously been linked to patients with AA [7]. Notably, NAMCS depression data is reported by physician offices through survey responses. Therefore, there may be underreporting of psychological symptoms such as depression, recent stress, and anxiety. This highlights the importance of acknowledging the psychological effects that hair loss can have on patients as well as the reverse.

In conclusion, the burden of disease was significant for patients with AA. Treatment patterns included the widespread use of TCS for the treatment of AA. Finally, our findings suggest that there may be underreporting of physiological symptoms such as stress, anxiety, and depression. These findings underscore the need for increased awareness of psychological conditions among dermatologists treating patients with AA.

### Potential conflicts of interest

April W. Armstrong has served as a research investigator and/or scientific advisor to AbbVie, ASLAN, BI, BMS, EPI, Incyte, Leo, UCB, Janssen, Lilly, Novartis, Ortho Dermatologics, Sun, Dermavant, Dermira, Sanofi, Regeneron, Pfizer, and Modmed. The remaining authors state no conflicts of interest.

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**Table 1.** Sociodemographics and multivariate logistic regression of National Ambulatory Medical Care Survey (NAMCS) visits by individuals diagnosed with alopecia areata (codes 704.01 and L63.9).

Variable	Estimated Total Visits (%)	OR <sup>a</sup>	95% CI <sup>b</sup>	P-value <sup>c</sup>
<b>Total</b>	2,298,432 (100)			
<b>Sex</b>				
Male	798,678 (35)	0.75	(0.47-1.19)	0.227
Female	1,499,754 (65)	Reference		
<b>Age, categorized (years)</b>				
<21	431,745 (19)	Reference		
21-40	800,290 (35)	2.07	(1.07-3.98)	0.03
41-60	658,100 (29)	1.11	(0.54-2.27)	0.776
61-80	393,624 (17)	0.68	(0.27-1.72)	0.418
≥81	14,673 (0.6)	0.10	(0.13-0.79)	0.029
<b>Race</b>				
Hispanic	222,901 (10)	1.35	(0.80-2.28)	0.258
Black	154,094 (7)	0.91	(0.29-2.74)	0.860
Asian/ Pacific Islander	96,547 (5)	1.55	(0.52-4.64)	0.428
Other	654,283 (28)	1.12	(0.17-7.27)	0.907
American Indian/ Alaska Native	70,647 (3)	17.03	(2.28-127.42)	0.006
White	1,099,960 (48)	Reference		
<b>Provider</b>				
Dermatologist	1,802,856 (78)	221.73	(69.4-708.1)	<0.001
Other Specialist	330,867 (15)			
Primary Care	164,709 (7)	Reference		
<b>Depression</b>				
Yes	98,589 (4.3)	0.43	(0.17-1.14)	0.089
No	2,199,843 (95.7)	Reference		
<b>Thyroid Disease</b>				
Yes	71,341 (3.1)	1.60	(0.23-11.15)	0.634
No	2,227,091 (96.9)	Reference		
<b>Seborrheic Dermatitis</b>				
Yes	79,848 (3.5)	28.36	(8.5-94.5)	<0.001
No	2,218,584 (96.5)	Reference		

<sup>a</sup>OR= Odds Ratio, <sup>b</sup>CI= Confidence Interval, <sup>c</sup>P value of significance ≤0.05