Dermatology Practical & Conceptual

No Association between Patient Demographics and Adverse Effects of Low-Dose Oral Minoxidil in a Retrospective Cohort study of Nonscarring Alopecia Patients

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Introduction

Low-dose oral minoxidil (LDOM) (<5 mg/day) is used off-label for treatment of androgenetic alopecia (AGA) and other nonscarring hair loss conditions [1]. There is evidence that patient demographics, including sex, age, and race, predict risk of adverse effects (AEs) with LDOM [2-3]. Therefore, we sought to analyze the potential relationships between patient demographics and AE development using a national database.

Case Presentation

On 20 June 2025, the All of Us database was queried for patients with AGA and other nonscarring hair loss who were prescribed LDOM (2005–2023). Only patients with >1 follow-up appointment were included. Outcomes included dizziness, hypertrichosis, peripheral edema, palpitations, headaches, and paresthesia. Risk of development of any and individual AEs was evaluated based on age, sex, race, and ethnicity using multivariable logistic regression. Results are reported as odds ratios (OR) and 95% confidence intervals (CI), with p-value <0.05 considered statistically significant.

A total of 142 patients prescribed LDOM for nonscarring alopecias were included, with mean age 56.2 years (range 18–81 years) and 81.7% female. Overall, 67.6% of subjects were <65 years (Table 1). Nineteen patients (13.3%) developed any AE, and no patient experienced peripheral edema.

Overall, AEs were experienced similarly amongst patients, irrespective of sex (male vs. female, OR:0.30, *P*=0.27) age (>65 vs. <65 years, OR:0.82, *P*=0.75), race (non-white vs. white, OR:0.53, *P*=0.38), and ethnicity (not Hispanic/

Table 1. Demographics and diagnoses of patients with hair loss on low-dose oral minoxidil.

Age <65, N (%), range	96 (67.6), 18–64
Age 65$_{+}$, N (%), range	46 (32.4), 65–81
Sex, N (%)	
Male	26 (18.3)
Female	116 (81.7)
Race, N (%)	
Black or African American	24 (16.9)
White	74 (52.1)
Other/unknown	44 (31.0)
Ethnicity, N (%)	
Hispanic or Latino	30 (21.1)
Not Hispanic or Latino	108 (76.1)
Diagnosis, N (%)	
Androgenic alopecia	47 (33.1)
Other nonscarring hair loss	95 (66.9)

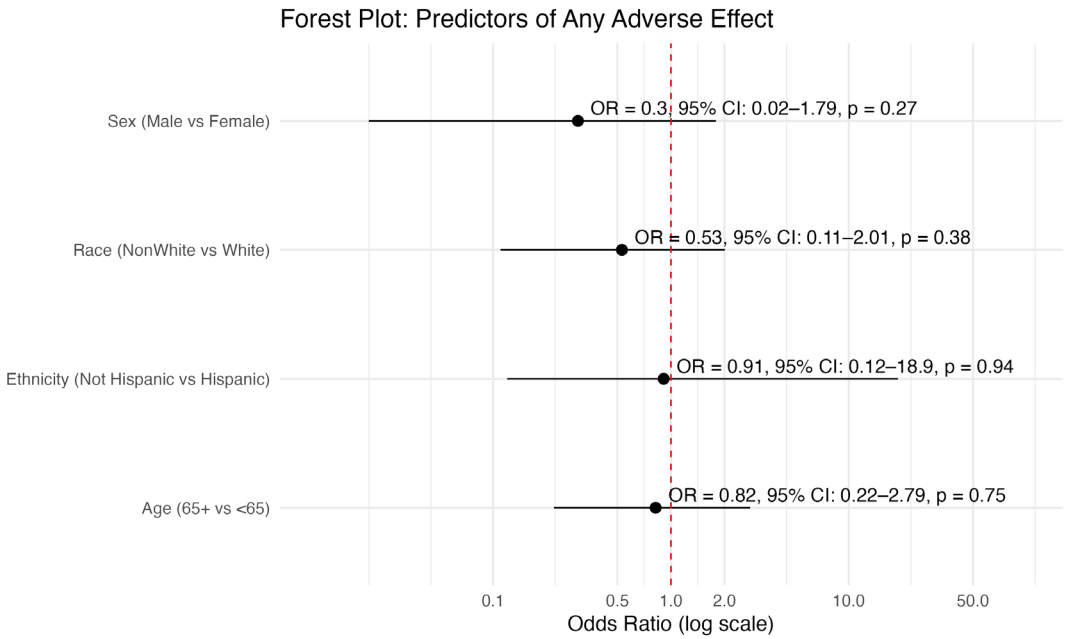

Figure 1. Forest plot depicting logistic regression analysis of patient side effect experience based on sex, race, ethnicity, and age.

Latino vs. Hispanic/Latino, OR:0.91, *P*=0.94) (Figure 1). Logistic regression models did not identify statistically significant associations between demographics and individual AEs.

Conclusions

We found that AEs were relatively uncommon in patients treated with LDOM for AGA and other nonscarring hair loss types. Our cohort experienced lower rates of hypertrichosis, headache (both <20 participants), and peripheral edema (0% vs. 1.3%–6%) than previous studies [2-5]. Therefore, AEs with LDOM for hair loss may be less common than previously thought, or these differences could be explained by the exclusion of patients without follow-up who prematurely stopped LDOM due to AEs.

Our study suggests that hair loss patients taking LDOM are not at increased risk of developing AEs based on demographics. Similarly, in a retrospective analysis of 310 AGA patients, females vs. males had higher risk of experiencing any AE, but this did not hold with subgroup analysis [2]. LDOM-associated AEs may instead be dependent on other patient factors such as weight. For example, a retrospective study of 435 AGA patients on LDOM identified a dose-response relationship, with increased LDOM dosage per

kilogram of patient body weight associated with an increased risk of hypertrichosis in males and headache in females [3].

Limitations include retrospective design, small cohort size, and data sparsity due to inconsistent documentation of LDOM dosage and route, which precluded analysis of dose-response relationships.

In sum, we found that patients taking LDOM for hair loss infrequently experienced AEs, and that patient demographics did not impact this risk. Therefore, our data support the safety of LDOM for hair loss treatment, with individualized physician-guided monitoring of patients for AEs.

Abbreviations: LDOM: low-dose oral minoxidil; AGA: androgenetic alopecia; AE: adverse effect; OR: odds ratio; CI: confidence interval.

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