

# Increased Incidence and Risk of Hair Loss with Glucagon-Like Peptide 1 Receptor Agonists: A Real-World Multicentre Cohort Study

**Authors:** Yagiz Matthew Akiska,<sup>1,2</sup> Savanna I. Vidal,<sup>1</sup> Nikita Menta,<sup>1</sup> Mana Nasser,<sup>1</sup> Dillon Nussbaum,<sup>1</sup> Colleen H. Cotton,<sup>1,3</sup> Leslie Castelo-Soccio,<sup>1,3</sup> \*Adam Friedman<sup>1</sup>

1. Department of Dermatology, George Washington University School of Medicine and Health Sciences, Washington D.C., USA
  2. Milken Institute School of Public Health, George Washington University, Washington D.C., USA
  3. Department of Dermatology, Children's National Hospital, Washington D.C., USA
- \*Correspondence to [ajfriedman@mfa.gwu.edu](mailto:ajfriedman@mfa.gwu.edu)

**Disclosure:** Akiska has received a travel grant from the National Alopecia Areata Foundation (NAAF) to attend the 2025 European Academy of Dermatology and Venereology (EADV) Congress in Paris, France.

**Keywords:** Alopecia, alopecia areata (AA), androgenic alopecia (AGA), diabetes, glucagon-like peptide 1 receptor agonists (GLP-1RA), hair loss (HL), obesity, telogen effluvium (TE).

**Citation:** EMJ Dermatol. 2025;13[1]:52-54.  
<https://doi.org/10.33590/emjdermatol/TYEW1122>

## BACKGROUND

Glucagon-like peptide-1 receptor agonists (GLP-1RA) are widely prescribed for Type 2 diabetes and obesity owing to their robust metabolic and cardiovascular benefits. Emerging reports, however, suggest a potential link between GLP-1RA use and non-scarring hair loss (NSHL), including telogen effluvium (TE), androgenic alopecia (AGA), and alopecia areata (AA). To clarify this association, the authors conducted the first large-scale, real-world multicentre cohort study evaluating GLP-1RA exposure and risk of hair loss (HL).<sup>1</sup>

## METHODS

This retrospective analysis leveraged the TriNetX US Collaborative Network (2014–2024), comprising 67 healthcare organisations and >100 million patients.

Adults (18–89 years) with  $\geq 2$  instances of GLP-1RA prescriptions (liraglutide, semaglutide, dulaglutide, exenatide, lixisenatide, or tirzepatide) were included. Patients with prior alopecia or confounding conditions, such as thyroid disease, ovarian dysfunction, menopause, malnutrition, chemotherapy, connective tissue disease, scarring alopecias, bariatric surgery, or trichotillomania, were excluded. Propensity score matching was performed for age, sex, race/ethnicity, BMI, and Type 2 diabetes status. HL outcomes were defined using the 10<sup>th</sup> version of the International Classification of Diseases (ICD-10) codes, with adjusted odds ratios (aOR) estimated at 6 and 12 months.

## RESULTS

Matched adult cohorts (n=547,993 each) were well balanced (mean age: approximately 53 years; approximately 50% female; 65% White, 17–18% Black, 10% Hispanic/Latino; [Table 1](#)). From 2014–2024, the incidence of TE, AGA, and overall NSHL rose more steeply in GLP-1RA users compared with controls. At 6 months, GLP-1RA exposure was associated with increased risk of AGA (aOR: 1.62; 95% CI: 1.24–2.12) and overall NSHL (aOR: 1.26; 95% CI: 1.15–1.38), while TE and AA were non-significant. By 12 months, risk was significantly elevated for TE (aOR: 1.76; 95% CI: 1.34–2.32), AGA (aOR: 1.64; 95% CI: 1.35–1.99), and overall NSHL (aOR: 1.40; 95% CI: 1.31–1.49), with AA remaining non-significant.

These findings align with pharmacovigilance signals from the FDA Adverse Event Reporting System (FAERS) and VigiBase, which reported increased odds of alopecia with semaglutide and tirzepatide.<sup>2,3</sup> Proposed mechanisms include rapid weight loss precipitating TE, metabolic and hormonal shifts accelerating AGA, and possible direct follicular effects

**Table 1: Baseline demographic and clinical characteristics of glucagon-like peptide-1 receptor agonist users and controls before and after propensity score matching.**

|                                           | After matching          |                        |
|-------------------------------------------|-------------------------|------------------------|
|                                           | Controls<br>(n=547,993) | GLP-1RA<br>(n=547,993) |
| Age, mean±SD                              | 55.0±14.6               | 52.8±13.5              |
| Female                                    | 274,100 (50.0%)         | 272,007 (49.6%)        |
| Male                                      | 273,893 (50.0%)         | 275,986 (50.4%)        |
| White                                     | 359,119 (65.5%)         | 357,782 (65.3%)        |
| Black/African American                    | 101,072 (18.4%)         | 95,585 (17.4%)         |
| Asian                                     | 18,448 (3.4%)           | 19,540 (3.6%)          |
| Native Hawaiian or Other Pacific Islander | 3,469 (0.6%)            | 4,031 (0.7%)           |
| American Indian or Alaska Native          | 2,803 (0.5%)            | 3,069 (0.6%)           |
| Other                                     | 22,765 (4.2%)           | 25,903 (4.7%)          |
| Unknown                                   | 40,317 (7.4%)           | 42,083 (7.7%)          |
| Hispanic or Latino                        | 53,198 (9.7%)           | 57,823 (10.6%)         |
| Not Hispanic or Latino                    | 353,589 (64.5%)         | 351,467 (64.1%)        |
| Unknown                                   | 141,206 (25.8%)         | 138,703 (25.3%)        |
| Type 2 diabetes, n (%)                    | 179,998 (32.8%)         | 197,649 (36.1%)        |
| <b>BMI, mean±SD (kg/m<sup>2</sup>)</b>    | <b>34.8±7.2</b>         | <b>36.3±7.8</b>        |
| 0.0–18.5                                  | 5,746 (1.0%)            | 8,936 (1.6%)           |
| 18.5–24.9                                 | 30,609 (5.6%)           | 30,429 (5.6%)          |
| 25.0–30.0                                 | 115,668 (21.1%)         | 109,508 (20.0%)        |
| 30.0–39.9                                 | 236,669 (43.2%)         | 233,930 (42.7%)        |
| ≥40.0                                     | 118,584 (21.6%)         | 112,048 (20.4%)        |

GLP-1RA: glucagon-like peptide-1 receptor agonist.

given GLP-1 receptor expression in hair follicles.<sup>4-6</sup> In contrast, case reports have described improvement in scarring alopecias such as folliculitis decalvans and central centrifugal cicatricial alopecia with GLP-1RAs,<sup>7,8</sup> suggesting divergent and complex biological pathways. Temporal trends further reinforce this signal: both cohorts experienced a spike in TE incidence around 2020, likely reflecting the impact of COVID-19, followed by a sustained rise among GLP-1RA users coinciding with the widespread adoption of semaglutide and tirzepatide.<sup>9</sup>

Together, these data support the authors' recommendation that all patients initiating GLP-1RAs should be counselled regarding the potential HL risk. For those presenting with new-onset shedding, nutritional and endocrine evaluation should be prioritised, and early referral to dermatology may improve outcomes and adherence. Educating patients on HL risks prior to therapy initiation may help set expectations, promote timely reporting, and inspire exploration of potential methods to prevent TE in this setting.

## CONCLUSION

In conclusion, GLP-1RA therapy was independently associated with increased incidence of TE, AGA, and overall NSHL in adults, but not AA. While causality cannot be established from observational data, this large, real-world dataset study provides

compelling evidence of a clinically relevant signal, highlighting the need for monitoring, patient education, and further mechanistic investigation.

## References

1. Akiska YM et al. Increased incidence and risk of hair loss with GLP-1 receptor agonists: a real-world multicenter cohort study. Abstract P2948. EADV Congress 2025, 17-20 September, 2025.
2. Kim TH et al. Adverse drug reaction patterns of GLP-1 receptor agonists approved for obesity treatment: disproportionality analysis from global pharmacovigilance database. *Diabetes Obes Metab.* 2025;27(6):3490-502.
3. Godfrey H et al. Alopecia associated with semaglutide and tirzepatide: a disproportionality analysis from the FDA adverse event reporting system (FAERS) from 2022 to 2023. *J Eur Acad Dermatol Venereol.* 2025;39(2):e153-4.
4. Zhang Y et al. Glucagon-like peptide-1 receptor agonists decrease hyperinsulinemia and hyperandrogenemia in dehydroepiandrosterone-induced polycystic ovary syndrome mice and are associated with mitigating inflammation and inducing browning of white adipose tissue. *Biol Reprod.* 2023;108(6):945-59.
5. Desai DD et al. GLP-1 agonists and hair loss: a call for further investigation. *Int J Dermatol.* 2024;63(9):1128-30.
6. Coogan PF et al. Association of type 2 diabetes with central-scalp hair loss in a large cohort study of African American women. *Int J Womens Dermatol.* 2019;5(4):261-6.
7. Morrisette K et al. Improvement of recalcitrant folliculitis decalvans with tirzepatide: a case report. *Cureus.* 2024;16(12):e76267.
8. Desir N et al. GLP-1 agonists may modulate treatment efficacy in central centrifugal cicatricial alopecia. *J Am Acad Dermatol.* 2025;93(3):771-3.
9. Nguyen B, Tosti A. Alopecia in patients with COVID-19: a systematic review and meta-analysis. *JAAD Int.* 2022;7:67-77.