



The shifting preferences of patients and physicians in nonsurgical hair loss treatment

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Abstract

Background: There are multiple etiologies for hair thinning and loss, including genetic, hormonal, immune, scarring, and infectious. Hair loss treatment involves both surgical intervention and nonsurgical therapies such as pharmaceuticals, haircare products, vitamins, and low-level laser therapy (LLLT). While pharmaceuticals have been extensively researched, the efficacy of other therapies remains inconclusive. With so many available treatments, consumers often research their options using search engines such as Google and/or seek help from hair restoration physicians.

Aims: To identify and analyze changing trends in international consumer and physician interest in nonsurgical hair loss therapies.

Methods: Worldwide trends in Google searches of hair loss products (2004-2020) were compared with product prescription frequency surveys from members of the International Society of Hair Restoration Surgery (2004-2019, ~29% response rate).

Results: Minoxidil and finasteride were the most prescribed hair loss treatments, while “minoxidil” was the most “Googled” term. Generic products were searched more often than their brand counterparts. Nutritionals and haircare prescriptions increased over time. LLLT was also increasingly prescribed, with Internet searches increasing following government regulation announcements. The COVID-19 pandemic initially negatively affected hair loss treatment searches, which have since returned to, and surpassed, pre-pandemic levels.

Conclusion: Regulations and social media have influence on consumer interest in hair loss products. A weak economy and coronavirus fears may persuade consumers to turn to cheaper hair loss treatment alternatives. Hair restoration specialists need to keep abreast of online trends to communicate effectively with their patients. Patients should be cognizant of the safety and efficacy of hair restoration treatments.

KEYWORDS

Google, hair growth, hair loss, ISHRS, laser treatment, minoxidil

1 | INTRODUCTION

Patients suffering from hair loss and thinning may improve, stabilize, or minimize their condition if properly diagnosed and treated using

nonsurgical therapies at early onset.¹ The various causes of hair loss are multifactorial and complex, including hormonal (eg, androgenetic alopecia (AGA), genetic, immune (eg, alopecia areata), scarring, and infectious (eg, tinea capitis). Prescription-based pharmaceuticals

such as finasteride and dutasteride improve AGA by principally reducing circulating serum dihydrotestosterone (DHT) levels. Minoxidil is an anagen-inducing agent that facilitates and stimulates a longer anagen growth phase of the follicle. Minoxidil is available over the counter (OTC) as a topical foam or liquid treatment, or as a prescribed oral agent, which is used extensively in European countries; it may reduce inflammation while stimulating hair follicle regeneration and growth. As an androgen-independent therapy, minoxidil has also been recommended for the diagnosis of hair loss in inflammatory scalp conditions, traction alopecia, autoimmune disorders of the scalp, and scarring alopecias.^{2,3}

Low-level laser therapy (LLLT), also known as photobiomodulation, involves subjecting the scalp to low levels of red or near infrared light around 650 nm. This wavelength may help promote hair growth and follicular regeneration of resting hair follicles.⁴ Other beneficial effects include regeneration by reducing inflammation and promoting wound healing. There are portable devices with laser diodes that patients can use at home ranging in low, medium, and high levels of fluence (J/cm²). Examples are the iRestore[®] helmet or cap; the HairMax[®] comb, hairband, or cap; or the Theradome[®] helmet, the Capillus[®] cap, as well as physician in-office, stationary devices.⁵ The safety and tolerability of LLLT devices is well established; the efficacy and clinical results appear promising, but studies are often small and lack rigorous testing methodologies.^{2,4,6}

Other hair loss treatments include antifungal shampoos and solutions. Ketoconazole shampoo is the most often used OTC treatment for seborrheic dermatitis ("dandruff") caused by *Malassezia* species colonization.⁷ Ketoconazole may also have anti-inflammatory properties that could contribute to inhibition of the miniaturization of hair follicles.² Prescription treatments for tinea capitis, a fungal scalp infection that often causes hair loss, include oral antifungals.⁷

Hair growth shampoos, nonmedical treatments, nutritional supplements (eg, saw palmetto), and vitamins are popular hair loss treatments, but have little to no data to substantiate efficacy. For example, a limited number of small noncontrolled studies suggest some efficacy of biotin (vitamin B7) in treating hair and nail disorders. However, true biotin deficiency is rare, and while relatively safe to take, can interfere with laboratory testing (eg, for thyroid-stimulating hormone).⁸

Another high profile manufactured gummy-based OTC oral supplement is Sugar Bear Hair marketed to young adults and is popular on social media.⁹ Studies have established the bioequivalence of tablet and other gummy-based vitamins, but this gummy-vitamin's relationship to improved hair density and hair counts has not been established.^{10,11} Many of the aforementioned vitamins have limited or no evidentiary support of their role in the treatment of hair loss disorders.¹²

Viviscal is a popular OTC oral supplement containing low doses of vitamin C, niacin, biotin, calcium, iron, and zinc. It is marketed directly to physicians as a proprietary blend of proteins, lipids, and glycosaminoglycans derived from marine sources. It is promoted to increase the number of terminal hairs in men and women. While the exact mechanism of this product is unknown, small limited studies

suggest improvements in terminal and vellus hair count, and terminal hair density.¹³

With multiple therapeutic options to address their conditions, patients with hair thinning and loss often turn to Internet search engines for relevant information about various treatment options. They may also turn to hair restoration specialists, or well-respected organizations such as the American Board of Hair Restoration Surgeons (ABHRS), or the International Society of Hair Restoration Surgery (ISHRS). The ABHRS is the only certifying board entity for hair restoration surgeons. Every surgeon certified is recognized as a Diplomat and has been scrutinized by passing rigorous written and oral examinations.

The ISHRS is a nonprofit medical society of over 1000 members in 70 countries dedicated to the science and ethical practice of hair restoration.¹⁴ Despite the designation as a surgical society, many if not all members of the ISHRS also offer nonsurgical treatments as alternatives to or in conjunction with hair restoration surgery. The ISHRS posts publicly available census data provided by their membership every 2-3 years, including data about their nonsurgical hair restoration practices.¹⁵ In the present study, nonsurgical hair loss treatment data from the ISHRS and Google Trends were analyzed and compared to provide insights into changing trends in professional and patient preferences for hair restoration treatments.

2 | METHODS

ISHRS data were obtained from Practice Census Statistics reports available at <https://ishrs.org/media/statistics-research/>.¹⁵ These reports were generated using results from surveys distributed to ISHRS members asking for information from the previous year. Therefore, the 2005 report contains information about the previous year, 2004, and so on. The ISHRS data in this study are from the following Practice Census Statistics reports with the respective response rates and 95% confidence interval margins of error: 2005 (37 ± 5.4%), 2009 (26 ± 6.5%), 2011 (25 ± 6.4%), 2013 (21 ± 6.5%), 2015 (31 ± 4.9%), 2017 (31 ± 4.9%), and 2020 (31 ± 5.0%).

Between June 9 and July 2, 2020, we used the Google Trends website (<https://trends.google.com/>)¹⁶ to determine the relative interest of various nonsurgical hair loss search terms, including general treatments (eg, "shampoo for hair loss") and specific products (eg, "Nioxin"). Worldwide search interests were included from January 2004 to present day: the extent of Google Trends' data collection.

Inclusion criteria for search terms included: (a) both generic and brand names of products specifically mentioned in the ISHRS Practice Census Statistics data, and (b) general names of the type of product (eg, shampoo for hair loss). For each search term, the top 5 "Related queries" offered by Google Trends were mined for comparative search terms to find the most popular search term. Exclusion criteria included terms that could be attributed to other products or

conditions, for example, the term “hair laser” could include lasers for hair removal. In these cases, more specific search terms were used, for example, “laser hair growth”.

For comparison purposes, products and search terms were organized by type of product into the following categories: (a) oral and topical pharmaceuticals (minoxidil (Rogaine®), dutasteride (Avodart®), and finasteride (Propecia®)), (b) natural products and nutritional (nutritional, biotin, saw palmetto, Sugar Bear Hair, Viviscal, and hair vitamins), (c) low-level laser therapies (LLLT) (iRestore, Capillus, Hairmax, Theradome, Laser hair growth, LLLT (home), and LLLT (office)), and (d) haircare products (antifungal shampoo, other special shampoo/haircare products, Nioxin shampoo/treatments, 2% Pyrithione zinc shampoo, hair growth oil, hair loss shampoo, and hair growth shampoo), which are represented in Figures 1-4, respectively. The last figure summarizes ISHRS and Google results from the most prescribed and searched product in each category, respectively: finasteride 1 mg/Propecia and “Finasteride” (oral pharmaceuticals); minoxidil foam 5%/Rogaine and “Minoxidil” (topical pharmaceuticals); LLLT (home) and “Hairmax” (LLLT); nutritional

and “Hair vitamins” (natural products); and other special shampoo/haircare and “Hair growth oil” (haircare).

3 | RESULTS

3.1 | Oral and topical pharmaceuticals

From the ISHRS Practice Census Statistics reports, regarding oral and topical pharmaceuticals, finasteride 1 mg (Propecia®) was consistently the most prescribed pharmaceutical every year, followed closely by minoxidil foam 5% and minoxidil solution 2% or 5% (Figure 1A). Prescriptions of the higher finasteride dose (5 mg, Proscar®) increased from 2004 to 2008, stabilized to just under minoxidil until 2014, then continually decreased. Dutasteride and modified minoxidil were consistently the least frequently prescribed (Figure 1A).

Worldwide Google Trends revealed a decrease in searches over time for the brand names of hair loss pharmaceuticals (Propecia®, Rogaine®, and Avodart®) and an increase in searches for their

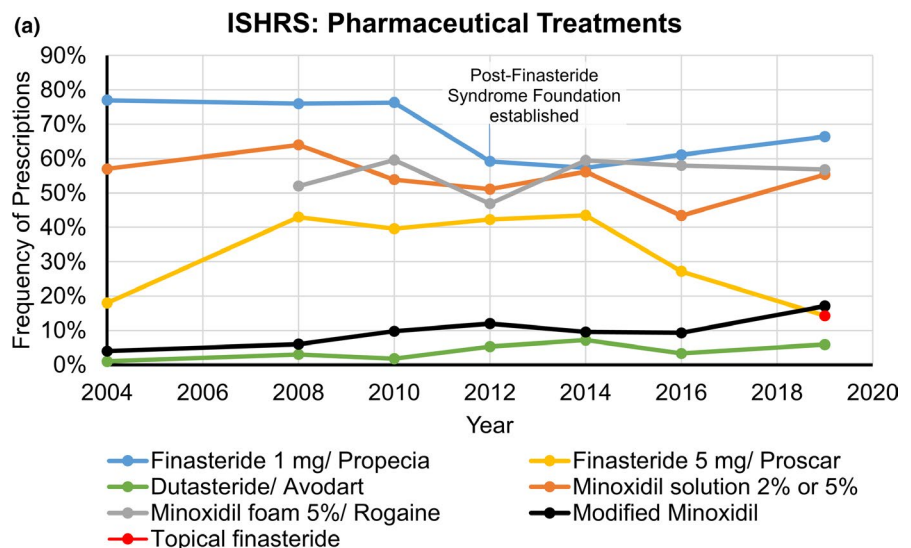
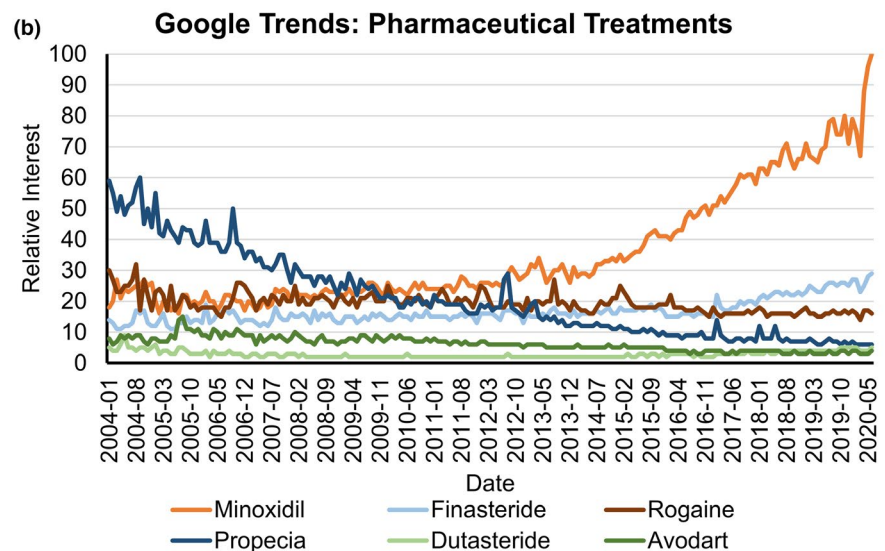


FIGURE 1 Prescription frequency and Google search trends for oral and topical hair loss pharmaceuticals. A, Prescription frequency of oral and topical pharmaceuticals from ISHRS data in censuses 2004-2019. Finasteride 1 mg and minoxidil topical products were consistently the most prescribed pharmaceuticals, with dutasteride and modified minoxidil the least. B, Worldwide Google search data on minoxidil, finasteride, and dutasteride and their brand-name counterparts (Rogaine, Propecia, and Avodart, respectively) from January 2004 to June 2020. “Minoxidil” and “finasteride” both surpassed their brand names in search frequency in 2008 and 2013, respectively, with “Minoxidil” surpassing all other pharmaceuticals and continuing to increase since 2010



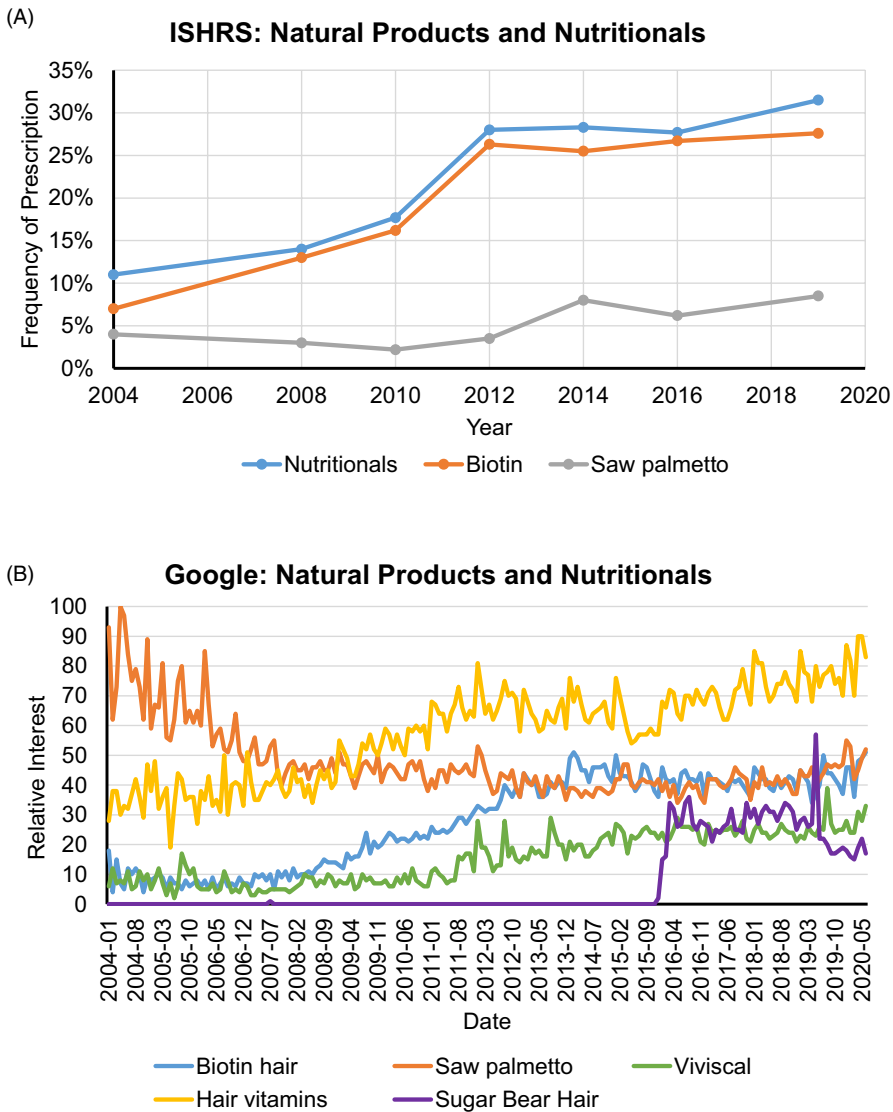


FIGURE 2 Prescription frequency and Google search trends for natural products and nutritional. A, Prescription frequency of nutritional (vitamins, herbs, minerals, etc), Biotin, and Saw Palmetto from ISHRS data in censuses 2004-2019. Prescriptions of all products increased over time, with nutritional and biotin increasing dramatically compared to saw palmetto. B, Worldwide Google search data on Biotin hair, Saw Palmetto, Viviscal, Hair vitamins, and Sugar Bear Hair from January 2004 to June 2020. Interest in “Hair vitamins” surpassed that of “Saw palmetto” in 2008, with the former being the most popular of all other natural product terms since. “Sugar Bear Hair” saw a drastic increase in popularity following the product’s release in 2015/2016, with a subsequent spike during a social media scandal in May 2019

generic counterparts (finasteride, minoxidil, and dutasteride, respectively) (Figure 1B). “Minoxidil” surpassed “Propecia” in late 2009 and continued to increase, becoming the most searched hair loss therapy in all categories (Figures 1-5), followed in this category by finasteride (Figure 1B). Searches for all hair loss oral and topical drugs decreased during March 2020, thereafter increasing to pre-March levels, or as in the case with “Minoxidil”, far surpassing them.

3.2 | Natural products and nutritional

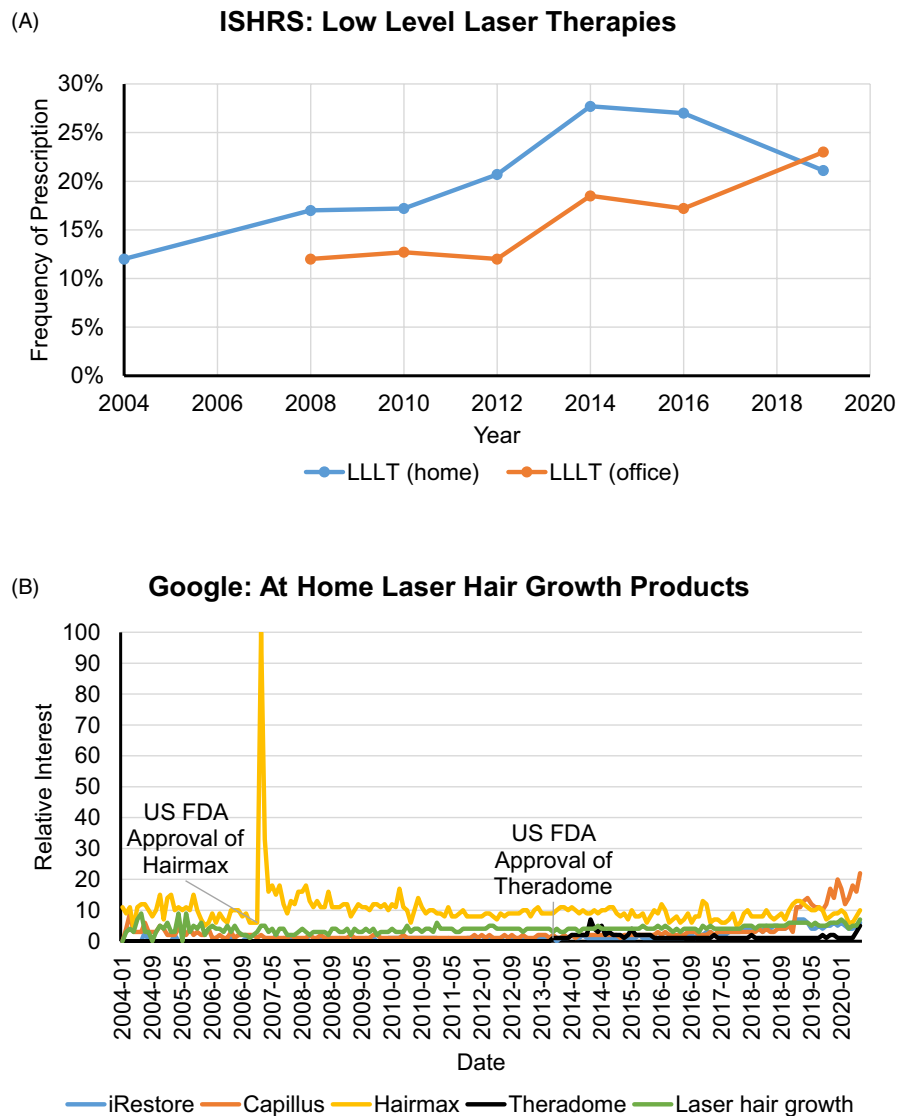
In regard to natural products, vitamins, and nutritional prescribed by ISHRS members, nutritional (nutritional, herbs, and vitamins) and biotin were prescribed at much higher levels than saw palmetto, with all three (nutritional, biotin, saw palmetto) increasing over time (Figure 2A). By contrast, worldwide Google searches for “Saw palmetto” and “Biotin hair” decreased and increased, respectively, until converging in 2013. Searches for “Sugar Bear Hair” increased

considerably in late 2015 to the same popularity as “Viviscal”, which it surpassed in May of 2019. Searches for “Hair vitamins” continually increased from 2004, becoming the most popular search term in this category since 2009 (Figure 2B).

3.3 | LLLT

From 2004 to 2016, ISHRS members reported prescribing at-home LLLT more often than in-office LLLT (Figure 3A). In 2016, prescriptions of at-home LLLT began to decline, becoming less frequent than in-office LLLT for the first time in 2019 (Figure 3A). Google Trends reports that between 2004 and 2019, the majority of Google searches for at-home LLLT products were for the “Hairmax” system, followed by the general search term “Laser hair growth”, which was only slightly more popular than “Capillus” (Figure 3B). Searches for “Hairmax” peaked in February 2007 following approval by the United States Food and Drug Administration (FDA).¹⁷ Similarly, searches for “Theradome” first appeared in June 2013 following US FDA approval (Figure 3B).¹⁸

FIGURE 3 Prescription frequency and Google search trends for laser hair growth products and services. A, Prescription frequency of home or in-office low-level laser therapy (LLLT) from ISHRS data in censuses 2004-2019. LLLT (home) products were consistently more often prescribed than in-office procedures until the most recent census in 2019, in which the latter surpassed the former. B, Worldwide Google search data on iRestore, Capillus, Hairmax, Theradome, and Laser hair growth from January 2004 to June 2020. "Hairmax" was consistently the most searched portable LLLT device until late 2018, when it was surpassed by "Capillus". Interest in "Hairmax" spiked in February 2007 following its approval by the US FDA; similarly interest in "Theradome" spiked in June 2016 following its approval



ISHRS members reported prescribing antifungal shampoo at similar rates to other special (ie, hair growth/antifungal/anti-dandruff) shampoo and haircare products, increasing in frequency over time (Figure 4A). Worldwide Google searches for hair growth products interestingly showed "Hair growth oil" was the most popular search term since 2010, followed by "Hair loss shampoo" and "Hair growth shampoo" (Figure 4B).

3.4 | Comparison of all nonsurgical hair loss treatments

In a comparison of the top prescribed products and most searched terms from each category, ISHRS members reported prescribing finasteride 1 mg most often, followed closely by minoxidil foam 5% (Figure 5A). Prescriptions for nutritionals, LLLT (home), and other haircare products were at much lower levels compared to pharmaceuticals (Figure 5A). A somewhat different pattern was observed in Google search trends (Figure 5B). Searches for "Minoxidil" greatly

surpassed all other terms, while searches for "Hairmax" (home LLLT) were the least popular. Searches for "Hair vitamins", "Hair growth oil", and "Finasteride" were of similar popularity, in-between "Minoxidil" and "Hairmax" (Figure 5B).

4 | DISCUSSION

Our results comparing worldwide Google search trends with prescription trends of members from the ISHRS revealed interesting similarities and differences between the experiences of the patient and the professional. Minoxidil was the most searched hair loss treatment by consumers and patients, with fewer searches initiated for finasteride (Figure 1B). In contrast, finasteride was the most prescribed treatment by physicians, followed closely by minoxidil foam or solution (Figure 1A). This disparity could be due to minoxidil being available over the counter,¹⁹ therefore, more available and visible to consumers, whereas finasteride requires a prescription by licensed professionals.²⁰ The decline in prescriptions for dutasteride

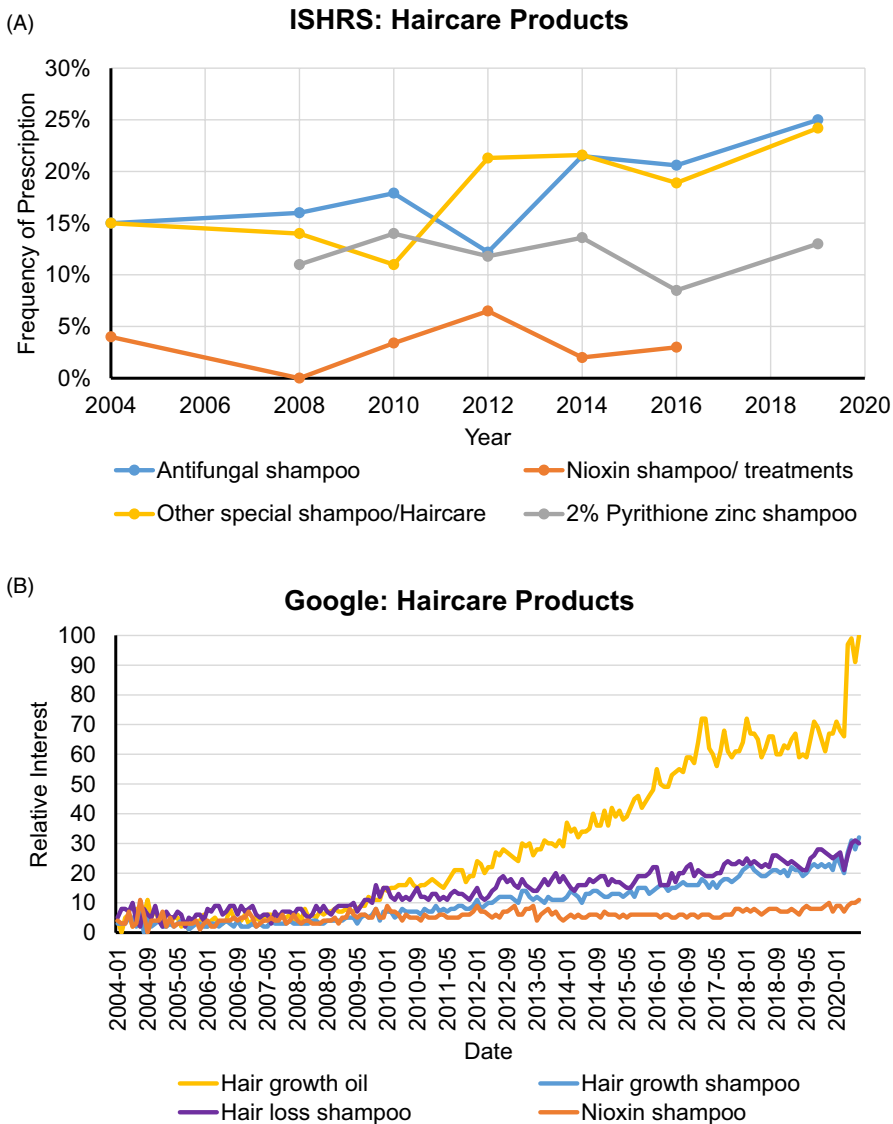


FIGURE 4 Prescription frequency and Google search trends for haircare products. A, Prescription frequency of antifungal shampoo, Nioxin shampoo, 2% pyrithione zinc shampoo, and other special shampoo/haircare products from ISHRS data in censuses 2004-2019. Other special shampoo/haircare products were prescribed at similar levels to antifungal shampoo, followed by 2% pyrithione zinc shampoo; Nioxin shampoo was the least prescribed. B, Worldwide Google search data on Hair growth oil, Hair loss shampoo, Hair growth shampoo, and Nioxin shampoo from January 2004 to June 2020. Searches for "Hair growth oil" surpassed all other terms in 2009 and continued to increase; a sharp increase occurred in April 2020 and remained at a high level at present day. Interest in "Hair loss shampoo" and "Hair growth shampoo" was at similar levels far below "Hair growth oil", both followed by "Nioxin shampoo"

and higher-dose finasteride likely reflects the increase in awareness by both professionals and patients of the side effects associated with these treatments, which include sexual dysfunction.²¹ A foundation dedicated to raising awareness of finasteride side effects was established in 2012, perhaps influencing the decline in prescriptions of finasteride 1 mg that same year.²²

Worldwide Google searches for brand-name hair loss pharmaceuticals have decreased over the years, while their generic counterparts have increased in popularity (Figure 1B), likely due to their lower prices compared to brand-name products. It is reasonable to suggest to clinicians that the use of both the generic and brand names is important when discussing pharmaceuticals with patients.

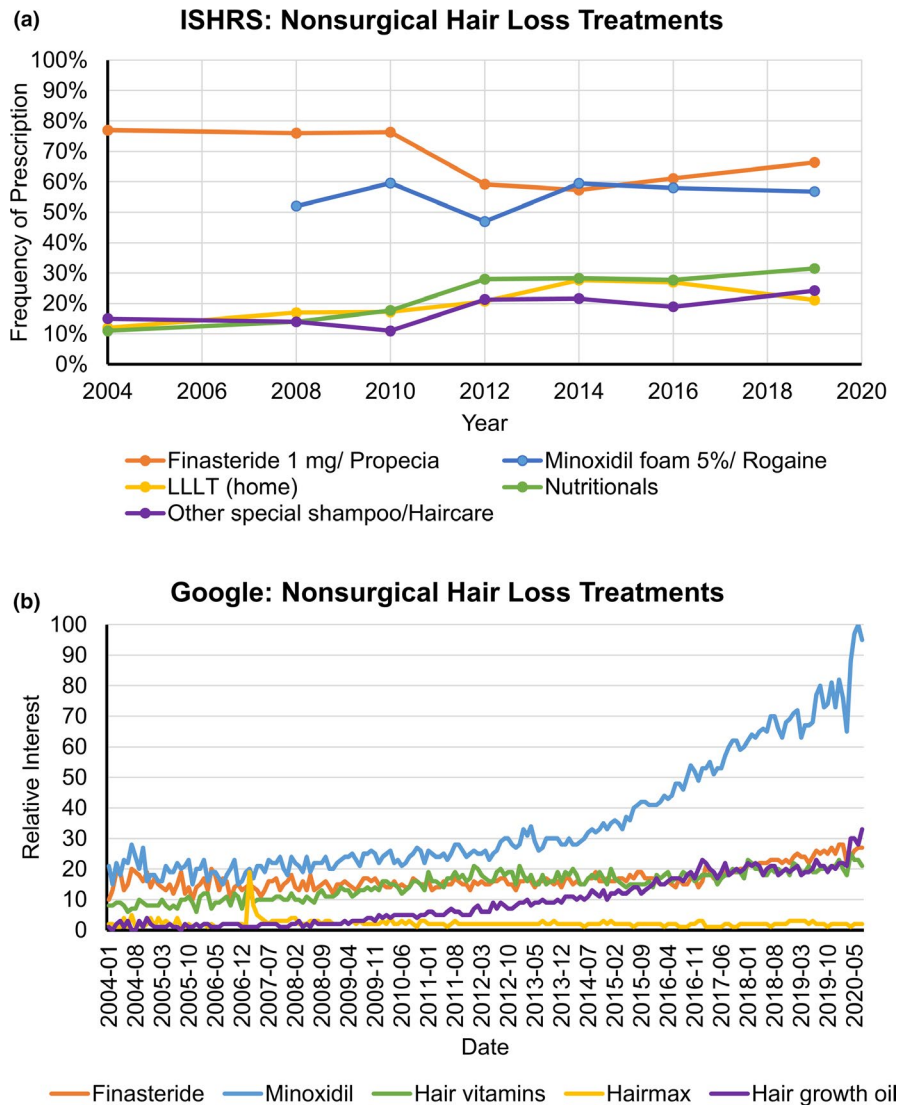
Nonprescription use of natural products, nutritional supplements, and haircare products have continued to increase since 2004 (Figures 2A and 3A), which may suggest clinicians are amenable to their early use in AGA and other hair loss medical conditions. There is a growing need for both patients and physicians to be aware of current research regarding the safety, tolerability, and efficacy of OTC products, as well as the need for further high-quality research demonstrating the

efficacy of hair loss therapies. Recommendations are for hair restoration physicians to be well informed of popular trends of OTC hair loss products, as well as the current medical literature to best inform their patients of available OTC treatment options.

Low-level laser therapies (LLLT), both at home and in office, were prescribed at about the same levels as nutritional supplements and haircare products by ISHRS members (Figure 5A). However, LLLT products were the least-searched hair loss therapies on Google, suggesting patients are less familiar with these products, and clinicians may need to discuss these options at greater length with their patients. That being said, searches for these products increased following FDA approval dates, meaning patients may be more aware of LLLT options during that time (Figure 5A).

Lastly, the ongoing COVID-19 pandemic has had a noteworthy effect on Google search trends for hair loss treatment. At the beginning of the global pandemic, during March 2020,²³ searches for all hair loss products decreased (Figures 1-5), likely due to diverted internet traffic toward coronavirus-related searches and away from personal cosmetic-related interests. However, searches for nearly

FIGURE 5 Prescription frequency and Google search trends for nonsurgical hair loss treatments. A, Prescription frequency of the most prescribed hair loss treatments in all four categories (pharmaceuticals, natural and nutritional, LLLT, and Haircare products) reported by the ISHRS censuses 2004-2019: finasteride 1 mg/ Propecia, LLLT (home), other special shampoo/haircare products, minoxidil foam 5%/ Rogaine, and nutritional from ISHRS data in censuses 2004-2019. Finasteride 1 mg was the most prescribed, closely followed by minoxidil foam 5%. Nutritionals, LLLT (home), and other special shampoo/haircare products were prescribed at similar levels. B, Worldwide Google search data on the most popular search terms in all four categories: Finasteride, Minoxidil, Hair vitamins, Hairmax, and Hairgrowth oil from January 2004 to June 2020. "Minoxidil" was the most popular search term, followed by "Finasteride", "Hair growth oil", and "Hair vitamins", with "Hairmax" being the least-searched term



all hair loss treatments have since returned to pre-March 2020 levels, with "Minoxidil" and "Hair growth oil" greatly surpassing these levels (Figure 5B). It is possible this increase is secondary to the closure of hair surgical offices around the world, causing consumers to place greater reliance on over-the-counter products. Searches for surgical hair restoration have not yet returned to pre-March levels (unpublished data), which further suggest that as clinics are re-opening, patients are less interested in nonurgent procedures, either due to unfavorable economic conditions or anxiety over exposure to the coronavirus. It would be of interest to observe how these trends change in the near future as the global response to the pandemic evolves.

CONFLICT OF INTEREST

None.

AUTHOR CONTRIBUTIONS

AKG conceived the idea and objective, designed the methodology, analyzed the data, and authored and edited the text. EMQ

performed the research, analyzed the data, and authored the text. KLW provided scientific input, critical review of the text, and authored the text.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available in the ISHRS Practice Census Statistics at <https://ishrs.org/media/statistics-research/>. These data were also derived from the Google Trends database available in the public domain: <https://trends.google.com/trends/>.

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REFERENCES

1. York K, Meah N, Bhoyrul B, Sinclair R. A review of the treatment of male pattern hair loss. *Expert Opin Pharmacother*. 2020;21(5):603-612.

2. Kelly Y, Blanco A, Tosti A. Androgenetic alopecia: an update of treatment options. *Drugs*. 2016;76(14):1349-1364.
3. Randolph M, Tosti A. Oral minoxidil treatment for hair loss: A review of efficacy and safety. *J Am Acad Dermatol*. 2020. doi:<https://doi.org/10.1016/j.jaad.2020.06.1009>.
4. Gupta AK, Carviel JL. Meta-analysis of photobiomodulation for the treatment of androgenetic alopecia. *J Dermatol Treat*. 2019;1-5.
5. Dodd EM, Winter MA, Hordinsky MK, Sadick NS, Farah RS. Photobiomodulation therapy for androgenetic alopecia: A clinician's guide to home-use devices cleared by the Federal Drug Administration. *J Cosmet Laser Ther*. 2018;20(3):159-167.
6. Gupta AK, Bamimore MA, Foley KA. Efficacy of non-surgical treatments for androgenetic alopecia in men and women: a systematic review with network meta-analyses, and an assessment of evidence quality. *J Dermatol Treat*. 2020;1-11.
7. Goldenberg G. Optimizing treatment approaches in seborrheic dermatitis. *J Clin Aesthetic Dermatol*. 2013;6(2):44-49.
8. Thompson KG, Kim N. Dietary supplements in dermatology: A review of the evidence for zinc, biotin, vitamin D, nicotinamide, and Polygodium. *J Am Acad Dermatol*. 2020 doi: <https://doi.org/10.1016/j.jaad.2020.04.123>.
9. Picard C. Here's the truth about those sugarbearhair vitamins that are causing a stir on the internet. Good Housekeeping. Published May 22, 2019. Accessed July 23, 2020. <https://www.goodhousekeeping.com/health/diet-nutrition/a27531274/sugar-bear-hair-vitamins/>
10. Wagner CL, Shary JR, Nietert PJ, Wahlquist AE, Ebeling MD, Hollis BW. Bioequivalence Studies of Vitamin D Gummies and Tablets in Healthy Adults: Results of a Cross-Over Study. *Nutrients*. 2019;11(5):1023.
11. Evans M, Guthrie N, Zhang HK, Hooper W, Wong A, Ghassemi A. Vitamin C Bioequivalence from Gummy and Caplet Sources in Healthy Adults: A Randomized-Controlled Trial. *J Am Coll Nutr*. 2020;39(5):422-431.
12. Guo EL, Katta R. Diet and hair loss: effects of nutrient deficiency and supplement use. *Dermatol Pract Concept*. 2017;1-10.
13. Ablon G. A 6-month, randomized, double-blind, placebo-controlled study evaluating the ability of a marine complex supplement to promote hair growth in men with thinning hair. *J Cosmet Dermatol*. 2016;15(4):358-366.
14. ISHRS. About. ISHRS. Published August 28, 2017. Accessed July 17, 2020. <https://ishrs.org/about/>
15. ISHRS. Statistics and Research. ISHRS. Published December 28, 2017. Accessed July 6, 2020. <https://ishrs.org/media/statistics-research/>
16. Google. Google Trends. Google Trends. Accessed July 6, 2020. <https://trends.google.com/trends/?geo=IT>
17. Hairmax. FDA Clearances. HairMax. Published 2020. Accessed July 17, 2020. <https://hairmax.com/pages/fda-clearances?locale=en>
18. Theradome. FDA clearance Archives. Theradome laser hair growth helmet. Accessed July 17, 2020. https://www.theradome.com/kbx_tag/fda-clearance
19. FDA. Drug Approval Package: Men's Rogaine (5% Minoxidil) NDA #021812. U.S. Food & Drug Administration. Published May 6, 2008. Accessed July 17, 2020. https://www.accessdata.fda.gov/drugsatfda_docs/nda/2006/021812s000TOC.cfm
20. Merck & Co., Inc. PROPECIA® (finasteride) tablets for oral use. Published online April 2012. https://www.accessdata.fda.gov/drugsatfda_docs/label/2012/020788s020s021s023lbl.pdf
21. Hirshburg JM, Kelsey PA, Therrien CA, Gavino AC, Reichenberg JS. Adverse Effects and Safety of 5-alpha Reductase Inhibitors (Finasteride, Dutasteride): A Systematic Review. *J Clin Aesthetic Dermatol*. 2016;9(7):56-62.
22. Post-Finasteride Syndrome Foundation. Home - Welcome to the Post-Finasteride Foundation. Published 2020. Accessed August 6, 2020. <https://www.pfsfoundation.org/>
23. World Health Organization. Timeline of WHO's response to COVID-19. World Health Organization. Published June 30, 2020. Accessed July 17, 2020. <https://www.who.int/news-room/detail/29-06-2020-covidtimeline>

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