

Original Research Article

A questionnaire-based survey among Indian dermatologists regarding the management of androgenetic alopecia with nutritional supplements

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ABSTRACT

Background: Androgenetic alopecia (AGA) is highly prevalent among Indians. Regardless of the type of alopecia, nutritional deficiency is common among Indians experiencing hair loss. However, data on clinical practices for using nutritional supplements as an adjunct in the management of AGA are lacking. The present questionnaire-based survey assessed the epidemiology of AGA, the role of nutritional supplements (their benefits and safety) and the real-world benefits (from patients' and physicians' perspectives) of a novel nutritional supplement containing a natural dihydrotestosterone (DHT) inhibitor, amino acids, vitamins, minerals and antioxidants as an adjunct in managing AGA.

Methods: Responses to the questionnaire were obtained from 236 healthcare professionals (HCPs) who treated 10 patients each for AGA in their routine practice and data were summarised as frequencies and percentages.

Results: More than half the HCPs opined that AGA is common among Indians aged 20–30 years. The majority of HCPs (97.46%) stated that AGA is more common in males than females. Approximately 58.47% of HCPs indicated that nutritional supplements containing DHT inhibitors are a better alternative adjunct treatment for AGA, whereas 99.15% reported that they had excellent (35.17%) or good (63.98%) efficacy. Overall, 92.36% of HCPs agreed (52.11%) or strongly agreed (40.25%) that a nutritional supplement pack lasting 15 or 30 days helps to improve compliance.

Conclusions: The survey findings indicate that the novel comprehensive nutritional supplement containing a natural DHT inhibitor is a good adjuvant in the treatment of AGA.

Keywords: Androgenetic alopecia, Dihydrotestosterone, Nutritional supplementation

INTRODUCTION

Androgenetic alopecia (AGA) results from a genetic predisposition that is characterized by heightened sensitivity to androgens.¹ Among Indians experiencing hair loss, nutritional deficiency is prevalent irrespective of the type of alopecia.² Both hair structure and hair growth are impacted by nutritional deficiency. Clinical evidence demonstrates an association between nutritional deficiency and chronic AGA and female pattern hair loss.³ AGA is characterized by follicular miniaturization

resulting in patterned hair loss. In males and females, the phenotype of AGA is different.⁴ In males, hair loss is concentrated at the vertex and frontotemporal regions, whereas females typically show diffuse hair loss around the crown with a widened part.¹ The prevalence of AGA rises with age, impacting 30% of individuals by age 30 and 50% by age 50.⁴ In Indian males aged 30–50 years, AGA affects approximately 58%, with about two-thirds classified under Norwood Hamilton grade II or III.^{5,6} At present, topical Minoxidil stands as the sole FDA-approved treatment option for hair loss in both men and

women, whereas oral Finasteride is approved solely for male pattern hair loss. However, oral nutritional supplements are reported to promote hair growth and can be useful adjuncts to current treatments.^{1,7} Complementary and alternative medicine involves natural products (such as amino acids, vitamins, minerals, antioxidants and dihydrotestosterone (DHT)-inhibitors including beta-sitosterol, soy isoflavones, green tea extract and grape seed extract) and mind and body medicine (acupuncture).

Hair loss may also result from the deficiency of multiple nutrients.² Both hair structure and hair growth are impacted by nutritional deficiency. A potential association has been observed between hair loss, including AGA and nutritional deficiency. Genetic disorders, medical conditions or dietary practices may lead to nutritional deficiencies. Therefore, it is evident that nutritional supplements are needed to correct these deficiencies.³

The present survey aimed to assess the clinical experience of Indian healthcare professionals (HCPs) concerning the epidemiology of AGA and the role of comprehensive nutritional supplements in its management.

METHODS

Study design

A pan-India survey using a pre-designed comprehensive questionnaire was conducted from August 2021 to October 2021 among 236 HCPs representing diverse geographical regions across India. The HCPs' responses to the questionnaire, depending on their clinical practice and observation of 10 patients with AGA in routine practice, were recorded. Since this survey did not entail any intervention on the subject, ethical clearance by an external ethics review board was not necessary in compliance with local legislation and national requirements.

Survey questionnaire

The survey consisted of 30 questions across four sections. The questionnaire assessed real-world clinical opinions from HCPs regarding the epidemiology of AGA, the role of nutritional supplements in its management and the real-world evidence supporting novel nutritional supplements containing natural DHT inhibitors, amino acids, vitamins, minerals and antioxidants as an adjuvant to primary therapy in managing AGA.

An opinion was also taken on Follihair A (Abbott Healthcare Pvt. Ltd.), a comprehensive nutritional supplement containing beta-sitosterol, evening primrose oil, soya isoflavones, green tea extract, grape seed extract, ginkgo biloba extract, melatonin, cysteine, methionine, vitamin B3, vitamin B5, biotin, folic acid,

zinc, iron, manganese, copper, choline and millet seed extract. The confidentiality and identity of participating HCPs were preserved throughout the survey and during data processing.

Analysis of survey results

Responses from the HCPs to the survey questions were documented in Microsoft Excel. The average percentage of HCPs favoring each answer was calculated.

RESULTS

Epidemiology of AGA in India

The majority of HCPs recognised that AGA is most prevalent among individuals aged 20–30 years, with 53.39% of respondents supporting this view. Additionally, around 44.07% of surveyed HCPs suggested that AGA is also commonly observed in people aged 30–40 years. Notably, 97.46% of HCPs indicated that AGA is more frequently seen in males than females.

Regarding the common causes of AGA, HCPs selected multiple parameters, including family history, hormones, stress and nutrition. Among the respondents, 16.53% of HCPs attributed the development of AGA primarily to family history, while 14.83% of HCPs identified family history and hormonal factors as contributing causes, whereas 13.98% identified hormones and stress as contributing factors. Furthermore, 11.86% expressed the view that all four factors family history, stress, nutrition and hormones contribute to the aetiology of AGA.

In clinical practice, the reported overlap between AGA and telogen effluvium (TE) varies among HCPs. Approximately 50% of respondents observed this overlap in 10%–20% of patients, while 37.71% noted overlap in 20%–50% of patients. Additionally, some HCPs, 10.59% and 1.69%, reported an overlap in 0%–10% and >50% of patients, respectively.

Role of nutritional supplements in the management of AGA

In managing AGA, HCPs commonly advocate for the inclusion of supplements alongside primary treatment regimens. Notably, a significant portion, comprising 45.34%, expressed a preference for a regimen that combines Minoxidil, antiandrogens and oral nutritional supplements. The other preferred treatments are shown in Figure 1.

One of the interesting observations during the survey was that many HCPs, close to 49.15%, believed that up to 25% of patients were hesitant to take oral Finasteride, whereas 29.24% of HCPs found this reluctance in 25%–50% of their patients.

Interestingly, in response to whether nutritional supplements with natural DHT inhibitors can serve as effective adjuvants in the management of androgenetic

alopecia, 26.27% of participants strongly agreed, 58.47% agreed, 14.83% somewhat agreed and 0.42% disagreed. (Figure 2).

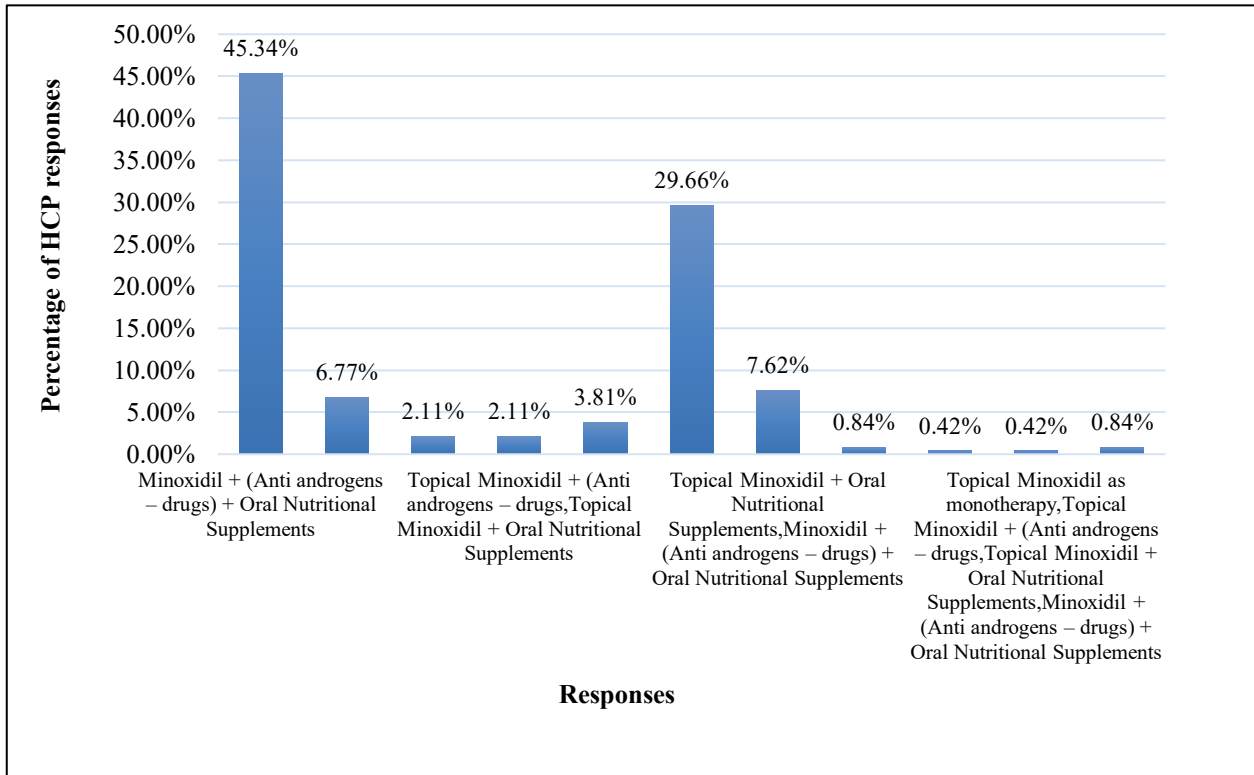


Figure 1: Preferred choice of treatment in aga management.

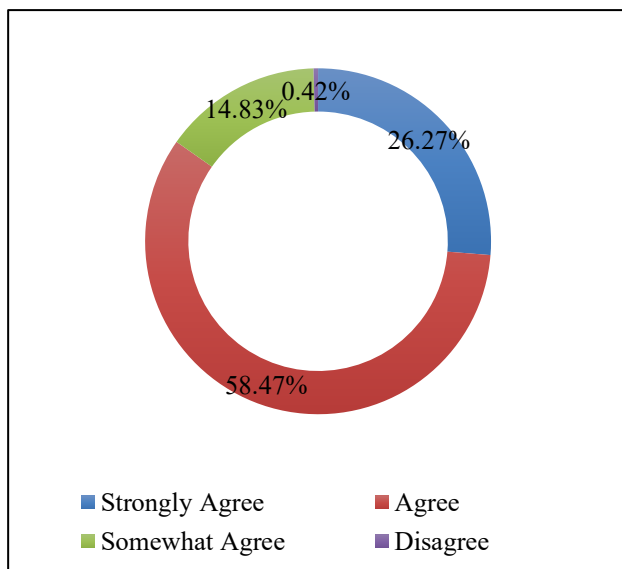


Figure 2: HCPs opinions regarding nutritional supplements containing natural dihydrotestosterone inhibitors as a good alternative in the treatment of AGA.

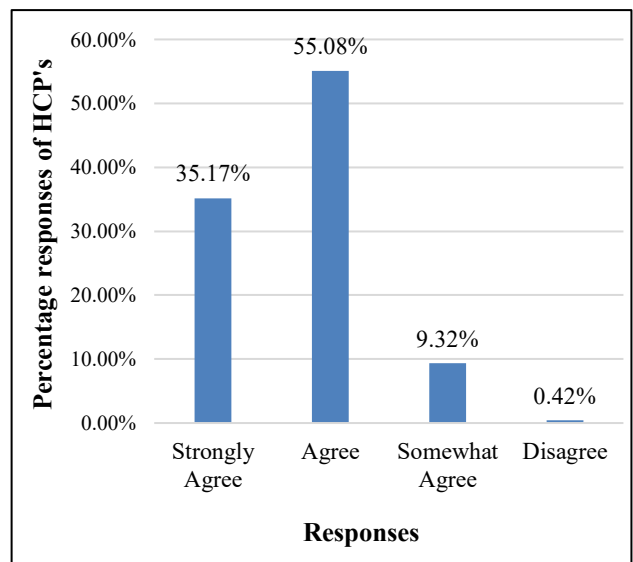


Figure 3: Opinion of HCPs about the role of nutritional supplements in the management of AGA as adjuvant therapy.

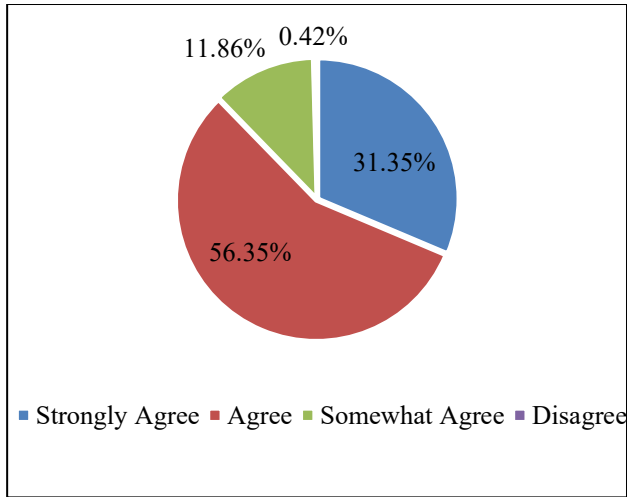


Figure 4: Agreement of HCPs on the role of oxidative stress and nutritional deficiencies in AGA.

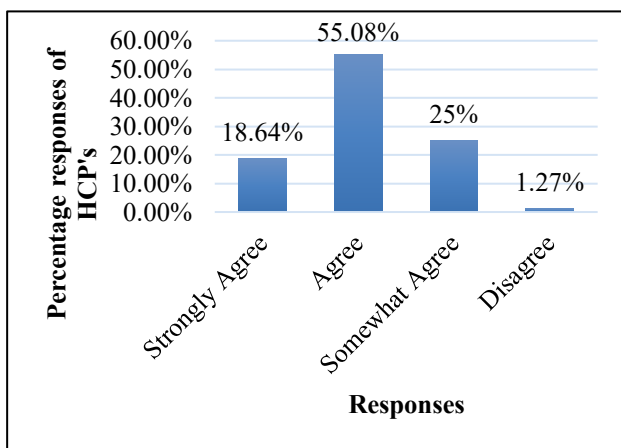


Figure 5: HCPs opinions regarding beneficial role of nutritional supplement formulations with antioxidants such as green tea extract, grape seed extract and ginkgo biloba extract in the management of AGA.

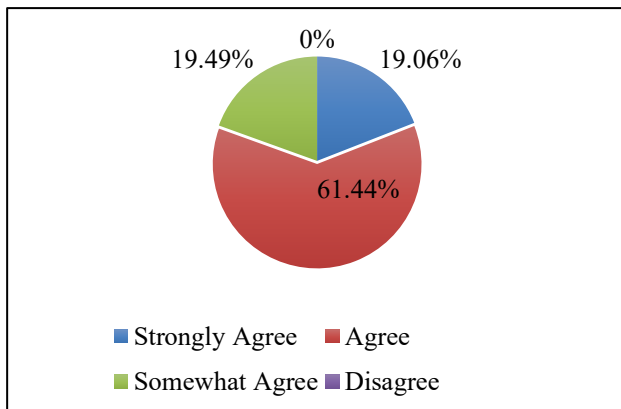


Figure 6: HCPs opinions regarding the beneficial role of formulations with natural extracts containing dihydrotestosterone inhibitors such as beta-sitosterol, gamma linoleic acid and soy isoflavones in the management of AGA.

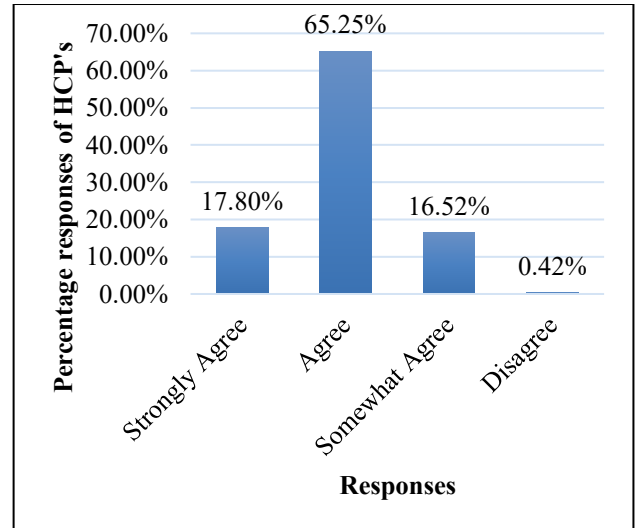


Figure 7: HCPs opinions regarding the beneficial role of formulations with nutrients such as methionine, millet seed extract, biotin, iron and zinc in the management of AGA.

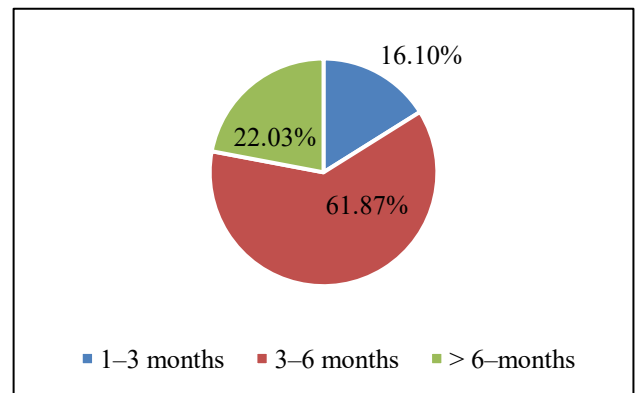


Figure 8: HCPs opinions on the duration of continuation of nutritional supplements in the management of AGA.

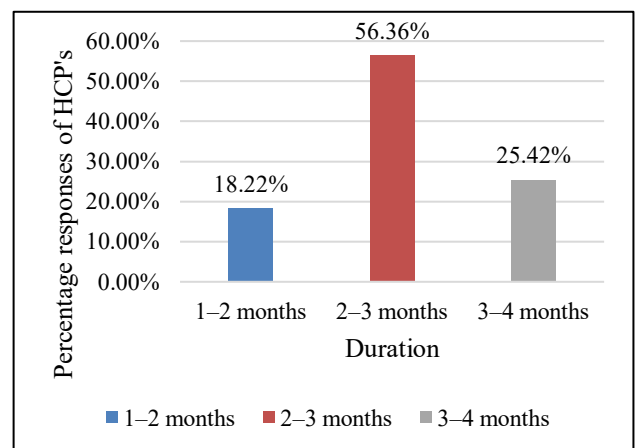


Figure 9: HCPs regarding how early the results of the novel nutritional supplements are visible in patients with AGA.

About 99.58% of HCPs agreed either strongly (35.17%), moderately (55.08%) or somewhat (9.32%) that nutritional supplements play a role as adjuvant therapy in the management of androgenetic alopecia, while only 0.42% disagreed. (Figure 3). For hair loss, a majority of HCPs, 93.22%, preferred nutritional supplements in tablets, whereas only 6.78% preferred powder formulations.

Among all HCPs surveyed, more than 56.36% acknowledged that oxidative stress and nutritional deficiencies contribute to AGA (Figure 4). About 18.64% of HCPs strongly agreed that a formulation with antioxidants such as Green Tea Extract, Grape Seed Extract and Ginkgo Biloba Extract would be beneficial in managing androgenetic alopecia; 55.08% agreed, 25% somewhat agreed and 1.27% disagreed. (Figure 5).

Furthermore, 19.06% of HCPs strongly agreed that natural extracts with DHT-inhibitory properties such as Beta Sitosterol, Gamma Linoleic Acid and Soy Isoflavones could be beneficial in managing androgenetic alopecia, while 61.44% agreed, 19.49% somewhat agreed and no HCPs disagreed (Figure 6). Notably, 99% of HCPs agreed either strongly (17.80%), moderately (65.25%) or somewhat (16.52%) that nutrients like Methionine, Millet Seed Extract, Biotin, Iron and Zinc could be beneficial in the management of androgenetic alopecia, with only 0.42% disagreeing (Figure 7).

Over half of the HCPs (52.12%) reported prescribing a nutritional supplement very frequently alongside Minoxidil in the treatment of androgenetic alopecia, 41.95% did so frequently, 5.93% occasionally.

In a multiple-response question, 22.88% of HCPs cited only stopping supplements once patients feel better as a major compliance issue, while 19.06% also pointed to the burden of multiple medications. Regarding the incidence of GI irritation and nausea with nutritional supplements, 63.14% of HCPs reported it in 0–5% of patients, 30.08% observed it in 6–10%, while 6.77% noted it in more than 10% of cases. In clinical practice, for the management of AGA, more than half of HCPs (61.87%) continued treatment with nutritional supplements for 3–6 months, whereas nearly 22.03% continued the treatment for >6 months (Figure 8).

In response to the safety and efficacy of natural DHT inhibitors in the management of androgenetic alopecia, 21.18% of HCPs strongly agreed, 65.68% agreed and 13.13% somewhat agreed. In clinical practice, most HCPs (97.46%) believed that enteric-coated nutritional supplement tablets improved intestinal absorption of nutrients and reduced GI irritation.

The majority of HCPs (94.07%) believed that flavored nutritional supplement tablets helped mask the taste of ingredients and improved patient compliance. A majority of HCPs noted that patients frequently inquire about the

vegetarian or non-vegetarian source of nutritional supplements, with 39.41% saying it happens often and 9.75% stating it happens always. Additionally, 78.39% of HCPs felt that nutritional supplements obtained from a vegetarian source were more preferred by patients compared with those from a non-vegetarian source.

Most HCPs (66.52%) opined that the size, shape and taste of tablets were not the reason for patients' trouble swallowing nutritional supplement tablets, although some others believed that the texture and shape of tablets could cause swallowing difficulties.

Physicians' perspectives on comprehensive nutritional supplement

As depicted in Figure 9, more than half of the HCPs (56.36%) opined that in patients with AGA, the visible results of comprehensive nutritional supplements are seen as early as 2–3 months, whereas one-fourth and less than one-fourth opined that visible results are observed in 3–4 months and 1–2 months, respectively.

A majority of HCPs viewed the new improved formula of Follhair A positively as an adjuvant in androgenetic alopecia treatment, with 68.64% agreeing, 25.42% strongly agreeing and 5.93% somewhat agreeing.

The majority of HCPs rated the new improved formula of Follhair A as effective in androgenetic alopecia management, with 63.98% rating it as good, 35.17% as excellent and only 0.84% as poor. HCPs reported high patient compliance with the new improved formula of Follhair A, with 64.83% rating it as good and 35.17% as excellent. Around 40.25% of HCPs strongly agreed that 15-day or 30-day supplement packs can improve patient compliance, 52.11% agreed, 6.78% somewhat agreed and 0.84% disagreed. Most HCPs observed moderate patient satisfaction with the new improved formula of Follhair A, with 46.19% reporting 56–75% satisfaction and 33.47% reporting 26–55%. Among all HCPs, around 65.68% observed that patients rated the chocolate flavor of comprehensive nutritional supplements as good and 33.89% of HCPs rated it as excellent.

DISCUSSION

AGA is a common cause of hair loss, having a higher prevalence in males than in females.⁴ Multiple factors, including genetics, hormones, environmental exposure, medications and nutrition, lead to hair loss.⁸ Survey results also align with the existing literature and suggest that 16.53% of HCPs acknowledged family history as a singular factor in AGA development, whereas 13.98% attributed AGA to a combination of hormones and stress. Furthermore, 11.86% of respondents believed that all four factors family history, stress, nutrition and hormones played a role in AGA development. Therefore, a multimodal approach is necessary for managing hair loss,

thus, the use of nutrition and diet is emerging as a dynamic area of treatment.^{8,9}

In normal hair follicle development and immune cell function, micronutrients such as vitamins and minerals play a key role. Evidence also suggests an important role of essential amino acids in hair loss.^{2,9} This indicates that for the development, prevention and treatment of alopecia, deficiency of micronutrients may represent a modifiable risk factor.⁹ In AGA, DHT is crucial for hair follicle miniaturization. Increased 5 α -reductase activity in the balding scalp converts testosterone to DHT, which accumulates due to a greater number of DHT receptors in hair follicles. Blocking this conversion could delay AGA's progression.¹⁰

Evidence also suggests that DHT in the presence of reactive oxygen species leads to a sequence of events resulting in the release of transforming growth factor β -1, which causes miniaturization and hair loss.¹¹ In a study by Nichols et al, evaluating the efficacy and safety of a nutritional supplement containing natural DHT inhibitors, the supplement improved thinning caused by AGA. Natural nutritional supplements combining green tea extract, beta-sitosterol, melatonin and soy isoflavones were indicated in patients with AGA for 24 weeks, which resulted in statistically significant improvement in efficacy measures of hair, including the hair mass index and terminal hair count.¹² A combination of natural extracts with DHT inhibitors containing beta-sitosterol, gamma-linolenic acid and soy isoflavones was considered effective for the management of AGA as per 61.44% of HCPs.

Topical Minoxidil and oral Finasteride are the only FDA-approved treatment options for hair loss.¹³ In the current survey, 49.15% of HCPs observed that up to 25% of patients with AGA were reluctant to use oral Finasteride. Experts suggest using nutritional supplements as an adjunct to approved medical treatments for the management of AGA. Oral supplements based on natural products are widely used for the management of hair loss.¹⁴ Around 55.08% of HCPs believed nutritional supplements contribute to the management of AGA as adjuvant therapy, whereas 35.17% of HCPs intensely support this.

Rajput et al, observed that with the use of nutritional supplements containing vitamin B, antioxidants, iron, amino acids, magnesium and folic acid in addition to Minoxidil in patients with AGA, consistent hair regrowth could be achieved beginning within 2–4 months while maintaining a favorable safety profile. Another study evaluating the efficacy of Minoxidil and nutritional supplements containing antioxidants, vitamins, minerals, omega-3, amino acids and biotin in patients with AGA showed that the use of nutritional supplements along with topical Minoxidil showed improvement with a correction of hair fall and a minimum of an 18% increase in density within 2 months.¹¹ The current survey findings also

suggest that combination therapy with Minoxidil, antiandrogens and oral nutritional supplements was preferred by 45.34% of HCPs for AGA treatment.

The literature suggests that green tea, a natural DHT inhibitor found in nutritional supplements, has multiple potential beneficial effects, including antioxidant properties and selective inhibition of 5 α -reductase activity.¹⁵ Antioxidants prevent the accumulation of free radicals or reactive oxygen species and thus block the action of DHT.¹¹ Findings from the current survey also indicate that 65.68% of HCPs agreed that natural DHT inhibitors can be safe and efficacious in the management of AGA.

Evidence demonstrates that in patients with AGA, the use of a natural product combination containing amino acids and minerals resulted in a significant mean change in total hair count after 50 weeks (29% vs. 11% for placebo).⁸ In addition to this, nutritional supplements containing amino acids, trace elements (zinc and iron) and vitamins, including biotin, are suggested to be beneficial in the management of hair loss.⁵ The study by Nichols et al, observed that nutritional supplements (containing antioxidants and botanical 5 α -reductase inhibitors) may be useful adjuncts in the treatment of AGA without major side effects.¹² In the current survey, 26.27% of HCPs strongly agreed and 58.47% agreed that nutritional supplements containing natural DHT inhibitors are a good alternative adjuvant in the treatment of AGA.

Vitamins and trace minerals, acting as enzyme cofactors, hormones, antioxidants and immunomodulators, play a key role in the hair follicle cycle and maintaining homeostasis. The literature suggests that in hair loss, botanical products help manage inflammation, reduce oxidative stress and balance hormone levels. Among all HCPs who participated in the survey, a significant portion acknowledged the benefits of various formulations in addressing hair loss. Specifically, 18.64% of HCPs strongly agreed and 55.08% supported the effectiveness of formulations containing antioxidants like green tea extract, grape seed extract and ginkgo biloba extract. Moreover, 61.44% recognized the effectiveness of formulations incorporating natural extracts such as beta-sitosterol, gamma-linoleic acid or soy isoflavones as DHT inhibitors for managing AGA. Additionally, 17.8% of HCPs strongly agreed and 65.25% of HCPs agreed that formulations containing nutrients such as methionine, millet seed extract, biotin, iron and zinc are beneficial for AGA management.

Oral nutritional supplements have been reported to reduce hair loss and promote hair growth and can be useful adjuncts to current treatments with better safety profiles.^{1,7,12,13} As per the survey findings, the majority of HCPs agreed that nutritional supplements in tablet form, taken for 3–6 months, can be good alternatives as adjuvants in the treatment of AGA. The survey also

revealed that a palatable natural supplement (vegetarian source and flavored) can increase patient compliance. Based on clinical practice, 40.25% of HCPs strongly agreed and 52.11% of HCPs agreed the effectiveness of a comprehensive nutritional supplement as an adjuvant in patients with AGA as good to excellent, with most agreeing that 2–3 months was the time needed for efficacy and preferring a 15-day or 30-day pack to ensure patient compliance.

Nutritional supplements rich in amino acids, along with Minoxidil, can be prescribed for around 3–4 months for the management of hair loss.⁵ For the management of AGA, the present study also demonstrated that 56.36% of HCPs observed visible results from comprehensive nutritional supplements as early as 2–3 months and 25.42% of HCPs strongly agreed while 68.64% of HCPs agreed that these supplements can be a good adjuvant in AGA in addition to the primary therapy.

A limitation of this survey is that it may not be representative of the entire population and further data is needed.

CONCLUSION

It can be concluded that AGA is highly prevalent in India. Several factors contribute to hair loss, including genetics, hormones, environmental exposure, medications and nutrition. However, oral nutrition supplements that reduce hair loss can be useful adjuncts to current treatments with better safety profiles. Therefore, the role of nutrition and diet in managing hair loss is a dynamic and emerging area. Thus, the current study assessed the real-world clinical practice data of using nutritional supplements as adjuvants in treating hair loss. The survey also established the benefit of a comprehensive nutritional supplement, Follhair A, in the management of AGA as perceived by Indian physicians and patients. Follhair A contains natural DHT inhibitors that inhibit the 5 α -reductase enzyme, thereby reducing hair loss. In addition, it contains other natural products such as amino acids and vitamins that promote hair growth. This suggests that Follhair A is a comprehensive natural supplement for both preventing hair loss and promoting hair growth. The survey integrates clinical insights from Indian dermatologists regarding AGA management. It highlights those nutritional supplements containing natural DHT inhibitors when taken in tablet form for 3–6 months, can effectively aid AGA treatment. Specifically, a comprehensive nutritional supplement has demonstrated encouraging results as an adjunct to primary therapies, showing noticeable effects within 2–3 months. The key takeaways were.

AGA is most prevalent among individuals aged 20–30 years, with a higher occurrence in males (97.46%), influenced by factors such as family history, hormones, stress and nutrition, as recognized by HCPs. Nutritional deficiencies significantly impact AGA patients,

highlighting the importance of supplements alongside approved treatments for effective management. Most HCPs (94.07%) advocate combining Minoxidil with nutritional supplements containing oral natural DHT inhibitors, antioxidants and essential nutrients such as biotin, zinc and iron, which show visible results in months (as early as 2–3).

Comprehensive nutritional supplements, improve compliance, with 82% patient satisfaction and 94.07% of HCPs acknowledging their effectiveness as adjuvant therapy for AGA. A multimodal approach, combining FDA-approved treatments such as Minoxidil with nutritional supplements containing natural DHT inhibitors, amino acids and vitamins, serves as an effective management modality of AGA. Nutritional supplements containing natural DHT inhibitors enhance hair growth, density and patient compliance, showing results within 2–3 months.

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