



# CAN WE PREDICT BALDNESS?

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## **I. Introduction**

Alopecia, commonly referred to as hair loss or baldness, is a condition that affects millions of individuals. While balding is often associated with aging, it can manifest at any age and can be attributed to a variety of factors, including genetics, lifestyle choices, underlying medical conditions, hormones, and medication. Understanding the complex interplay of these factors is crucial for developing effective prevention and treatment strategies for alopecia. This research paper seeks to uncover the primary predictors of baldness onset and progression among individuals.

The first step will be to examine the main factors that contribute to the onset of baldness. This paper will also explore the different forms of baldness and investigate how they differ in terms of predisposing factors and contributing influences. Four main kinds of hair loss will be the primary focus here: alopecia areata, hair loss caused by the immune system attacking the hair follicles; androgenetic alopecia, hair loss primarily triggered by genetic influences; traction alopecia, hair loss influenced by wearing tight hairstyles; and telogen effluvium, hair loss caused by stress, hormones, or medication.

By leveraging advanced analytics and predictive modeling techniques, this research paper seeks to deduce patterns from the data that may aid in early prediction and identification of baldness. For one, understanding how an individual's choices might foster or prevent hair loss can inform targeted interventions aimed at reducing baldness occurrence and severity. Additionally, genetic predisposition is widely acknowledged as a significant determinant of baldness susceptibility. By examining the literature on baldness and analyzing the dataset, this paper seeks to quantify the extent to which genetic factors contribute to the likelihood of developing baldness. Moreover, this paper will also explore the possibility of preventing or mitigating baldness, even in individuals with a genetic predisposition. Finally, this paper will investigate the relationship between age and the onset or progression of baldness, shedding light on whether age can serve as a reliable predictor of baldness.

## **II. Research Questions**

1. How do different forms of alopecia vary in terms of their predisposing factors and contributing influences?
2. Can alopecia onset be accurately predicted using lifestyle factors, genetic predisposition, and medication history?
3. Does age play a significant role in the onset or progression of baldness among individuals?

## **III. Hypothesis**

The hypothesis for this research paper is that alopecia onset is influenced by genetic predisposition, lifestyle factors, medication history, and age. The first aspect of this hypothesis is that individuals with specific genetic markers associated with hair loss susceptibility are more likely to develop alopecia, and certain genetic variations may be predictive of different types of baldness. Secondly, unhealthy lifestyle behaviors such as poor diet, high stress levels, and smoking are correlated with an increased risk of developing alopecia. Certain medications may also be associated with either an increased or decreased risk of alopecia. This paper aims to identify the potential influences of medication on hair loss. Lastly, one more anticipation of the results of the analysis of the data sets is that that age influences the likelihood of developing baldness. By investigating these hypotheses through comprehensive data analysis, this research aims to explore the possibility of predicting alopecia prior to its onset.

## **IV. Methodology**

For this research paper, two distinct datasets were sourced from Kaggle, supplemented by an additional dataset obtained from Huggingface. The first dataset from Kaggle comprises data on 1000 individuals and includes various factors that have the potential to influence alopecia. This dataset provides different variables, including but not limited to genetics and lifestyle choices, allowing for investigation into their correlation with alopecia.

The second dataset, sourced from Kaggle.com, comprises a significantly larger sample size of 100,000 cases. This dataset explores the interrelationship between health influences and their association with hair loss. A supplementary dataset from huggingface.com examines how different medications influence hair loss.

## V. Literature Review

1. The article “Alopecia Areata: Current State of Knowledge” by David Norris, published in the Journal of the American Academy of Dermatology, provides valuable insights into the understanding of alopecia areata, a condition characterized by hair loss. This paper emerged from discussions held at the National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS) research workshop, which focused on various aspects of alopecia areata, including genetics, immunology, triggers, and treatment strategies.

Unravelling the underlying mechanisms and contributing factors of alopecia areata, as discussed in Norris’s article, contributes to broader understanding of hair loss conditions in general. While the focus of Norris’s paper is primarily on alopecia areata, the insights gained from studying the genetics, immunology, triggers, and treatment strategies of this condition can also provide valuable clues in predicting other forms of hair loss. By uncovering genetic markers, immune system responses, triggers, and potential treatment targets for alopecia areata, researchers may gain a better understanding of the broader spectrum of hair loss disorders. This increased understanding could potentially lead to the development of predictive models or diagnostic tools that could aid in forecasting baldness or identifying individuals at higher risk for hair loss conditions.

2. The paper “Hunting the Genes in Male-Pattern Alopecia: How Important are They, How Close are We and What will They tell Us?” by Heilmann-Heimbach et al. offers a thorough examination of genetic research concerning androgenetic alopecia, commonly known as male-pattern baldness. This type of hair loss is highly prevalent among men and is heavily influenced by genetic factors. The authors delve into the heritability and genetic architecture of androgenetic alopecia, providing insights into its underlying genetic mechanisms.

Understanding the genetic basis of androgenetic alopecia holds significant implications for predicting baldness. By identifying specific genetic markers associated with male-pattern baldness, predictive models can be developed to assess an individual's risk of developing this condition. Heilmann-Heimbach et al. also address the challenges associated with using genetic data to predict androgenetic alopecia risk in young males.

3. "A Systematic Simulation-Based Meta-Analytical Framework for Prediction of Physiological Biomarkers in Alopecia" by Syed Aun Muhammad et al. provides valuable insights into the identification of potential biomarkers for alopecia. The research team identified twelve candidate biomarkers with distinct expression patterns across multiple datasets. The identification of these biomarkers addresses current limitations in understanding the genetic and environmental factors contributing to alopecia. By providing a framework for biomarker discovery, this research provides a foundation for developing predictive models for baldness.
4. In "Traction Alopecia: The root of the problem," Victoria Billero and Mariya Miteva delve into the intricate nuances of traction alopecia, a condition predominantly affecting women of African descent who engage in prolonged and traumatic hairstyling practices. Through a comprehensive exploration, the authors highlight the impact of tight buns, ponytails, weaves, hair extensions, and tight braids on hair health. They emphasize the heightened risk associated with the extent and duration of traction, as well as the use of chemical relaxers. Moreover, the article examines the potential progression of TA into irreversible scarring alopecia if proper intervention is not initiated.
5. The paper provides a succinct yet comprehensive overview of traction alopecia, highlighting its historical context, clinical features, diagnostic tools, and treatment modalities. By emphasizing the reversible-to-irreversible progression of the condition and its association with tightly pulled hairstyles, the authors underscore the global significance of this form of alopecia across diverse racial groups. The inclusion of new examination findings such as traction folliculitis, the fringe sign, and hair casts on dermatoscopy offers valuable insights into early detection and

specialist referral. Additionally, the discussion on treatment strategies, ranging from lifestyle modifications to hair transplantation, underscores the current challenges in managing traction alopecia and the need for further research to elucidate its pathogenesis. Overall, the paper serves as a valuable resource for dermatologists, providing practical guidance for prompt diagnosis and intervention in clinical practice.

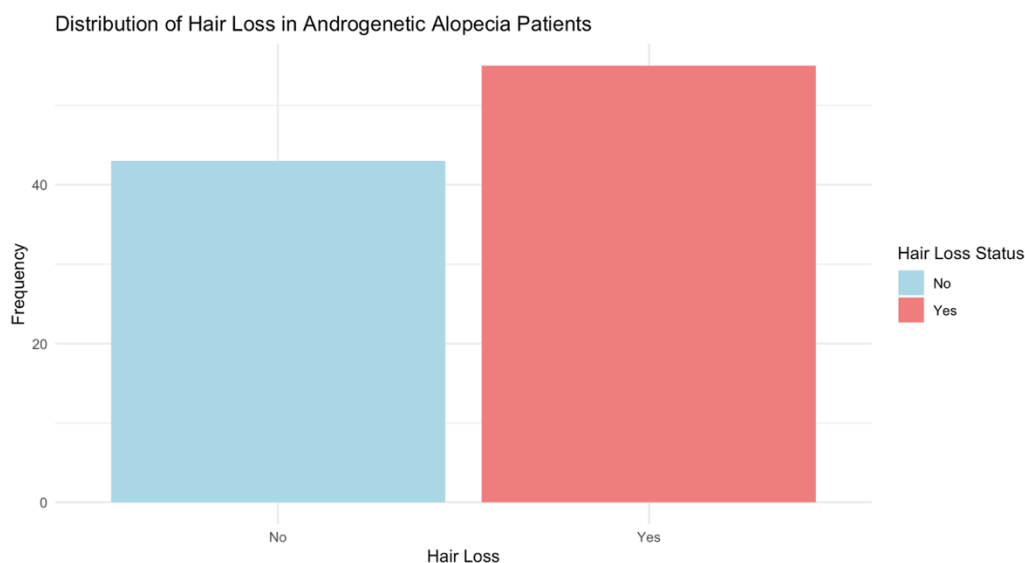
6. “Topographic Phenotypes of Alopecia Areata and Development of a Prognostic Prediction Model and Grading System: A Cluster Analysis,” by Lee et al. presents a novel approach to understanding the phenotypes of alopecia areata and their prognostic implications. By employing cluster analysis, the study identifies five distinct subgroups based on the extent and distribution of hair loss. Importantly, the development of the Topography-based Alopecia Areata Severity Tool (TOAST) provides clinicians with a practical grading system to accurately describe the extent and distribution of hair loss, aiding in treatment planning and prognostic assessment.
7. Liu et al.’s paper, “Factors Associated with Early-Onset Androgenetic Alopecia: a Scoping Review,” examines the risk factors associated with androgenetic alopecia. The paper explores the relationship between genetic predisposition, lifestyle factors, hormonal profiles, and metabolic abnormalities in the development of early-onset androgenetic alopecia (AGA). The authors also explore the potential challenges in treatment response among young men with AGA, particularly concerning the efficacy of medications targeting related comorbidities.
8. In their paper, “Hair Loss: Common Causes and Treatment,” Phillips, Slomiany, and Allison provide a comprehensive overview of common causes and treatment modalities for hair loss, emphasizing the importance of early recognition and management. They categorize hair loss into scarring and nonscarring alopecias, focusing on the latter, which can be effectively diagnosed and treated. This paper also discusses specific conditions such as androgenetic alopecia, alopecia areata, trichotillomania, and anagen effluvium. For each disorder, the authors outline key

clinical features, diagnostic considerations, and evidence-based treatment options. Insights into less common causes of hair loss are also provided, indicating the importance of accurate diagnosis and appropriate management strategies.

## VI. Exploratory Analysis and Results

### A. How do different forms of alopecia vary in terms of their predisposing factors and contributing influences?

Hair loss may occur as a result of genetics, medication history, lifestyle factors, hormonal changes, or other medical conditions. The four main types of alopecia examined in this paper have different contributing factors. Androgenetic alopecia (AGA), being the most common form of hair loss is dictated by genetics<sup>1</sup>; it is also the most common cause of non-scarring alopecia.<sup>2</sup> While there are a number of risk factors that contribute to the onset of AGA, genetics remains the most determinant and prevalent factor.<sup>3</sup>



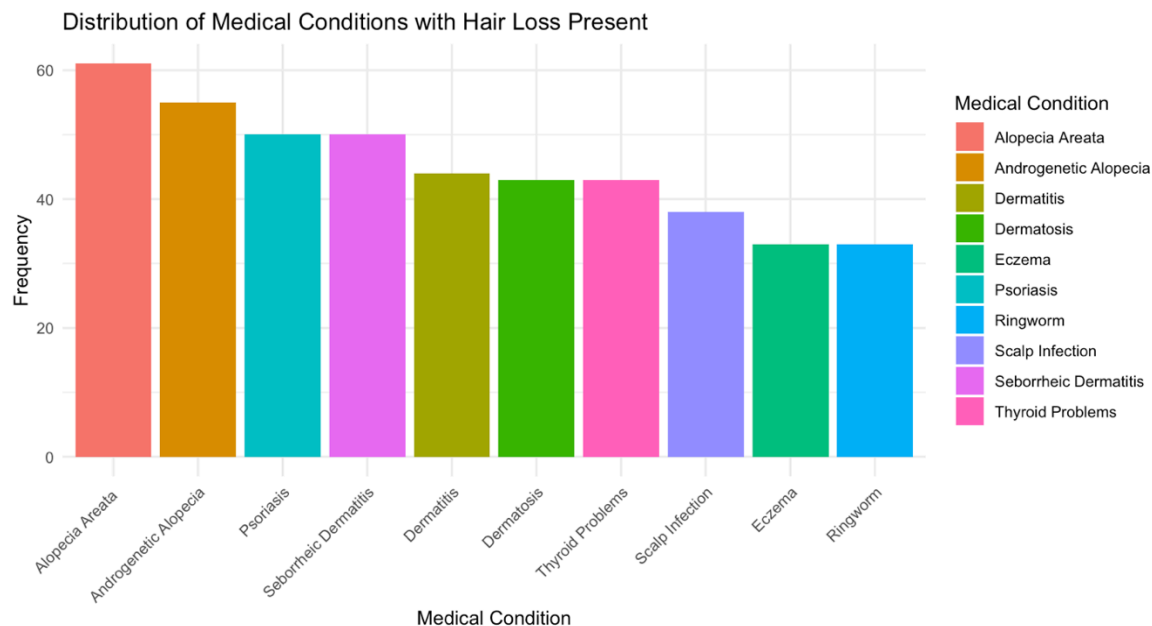
Analysis of the data indicates that individuals who possess a genetic predisposition to androgenetic alopecia (AGA) often exhibit hair loss, suggesting

<sup>1</sup> NYU Langone Health. (n.d.). Hair loss: Types. Retrieved from <https://nyulangone.org/conditions/hair-loss/types#:~:text=Androgenetic%20alopecia%20is%20the%20most,manage d%20with%20medication%20or%20surgery.>

<sup>2</sup> Liu, L.-P., Wariboko, M. A., Hu, X., Wang, Z.-H., Wu, Q., & Li, Y.-M. (2024). Factors associated with early-onset androgenetic alopecia: A scoping review. *PLOS ONE*, 19 (3), e0299212. <https://doi.org/10.1371/journal.pone.0299212>

<sup>3</sup> Liu, L.-P. et. al., (2024). Factors associated with early-onset androgenetic alopecia.

a strong likelihood that genetic factors contribute to the onset and progression of alopecia.



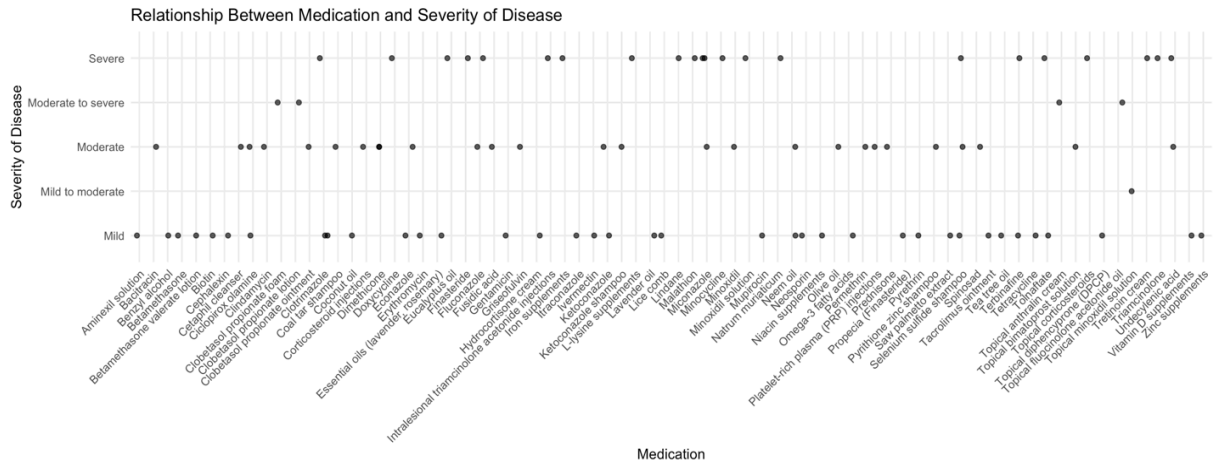
The analysis, taken a step further, reveals an association between medical conditions and hair loss. One notable revelation is the high occurrence of psoriasis in those who have baldness present. Rune and Kroniesen-Weirisma provides an explanation for this outcome in their article, “Psoriatic Alopecia: Acute and Chronic Hair Loss in 47 Patients with Scalp Psoriasis.” Psoriasis, an inflammatory condition that affects the skin and the scalp, is often accompanied by hair loss, albeit the hair loss is reversible.<sup>4</sup>

Androgenetic alopecia and alopecia areata are the lead medical conditions in those with baldness present. Androgenetic alopecia and alopecia areata are different from the other medical conditions in that hair loss caused by both types is often incurable and manageable at best.<sup>5</sup> Other medical conditions in the data set either lead to alopecia areata or other forms of hair loss—usually temporary.

<sup>4</sup> Runne, U., & Kroneisen-Wiersma, P. (1992). Psoriatic Alopecia: Acute and Chronic Hair Loss in Psoriasis. *Dermatology*, 185(2), 82–87.

<sup>5</sup> Meidan, V. M., & Touitou, E. (2001). Treatments for Androgenetic Alopecia and Alopecia Areata. *Drugs*, 61, 53–69. <https://doi.org/10.2165/00003495-200161010-00006>

## B. Can alopecia onset be accurately predicted using lifestyle factors, genetic predisposition, and medication history?



An analysis of various medications shows a strong correlation between alopecia and certain medications, with varying levels of alopecia severity, depending on the medication.

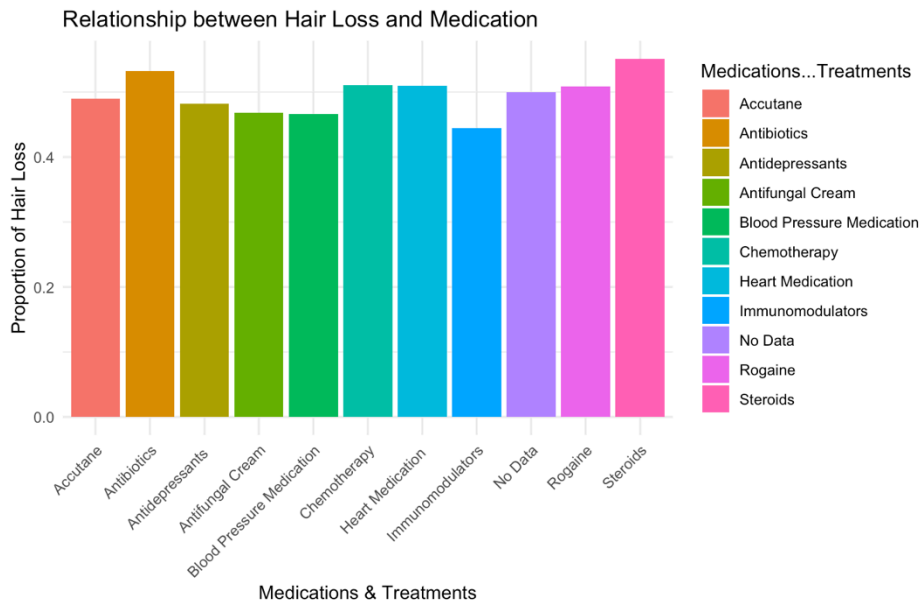
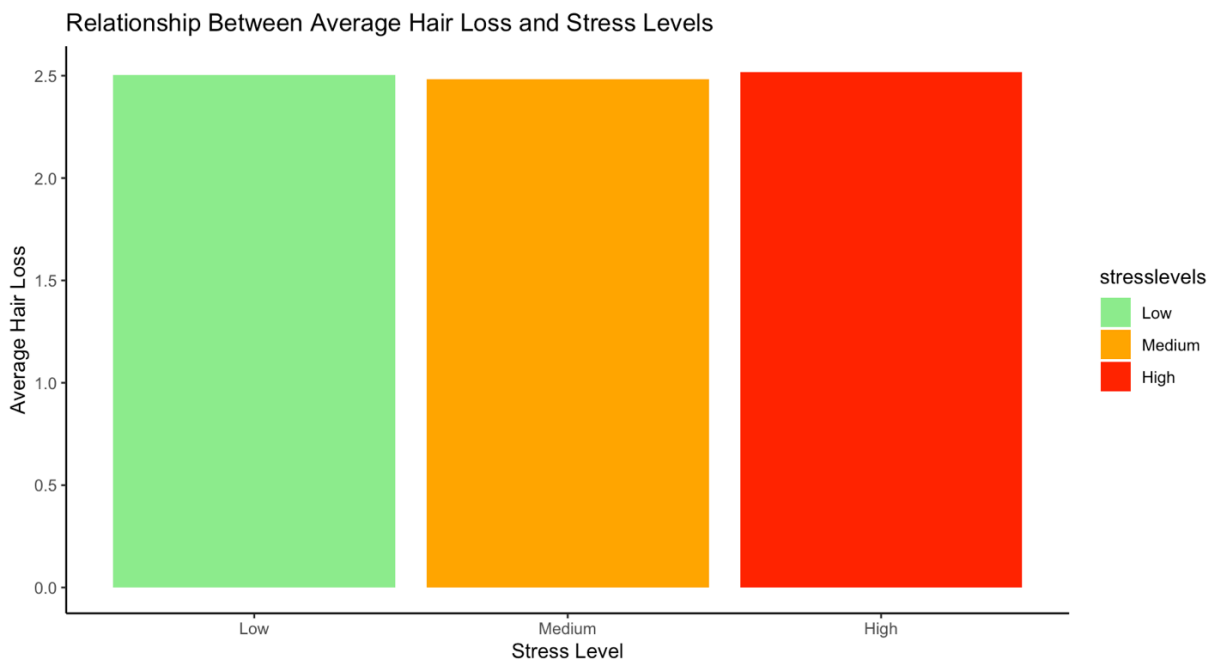


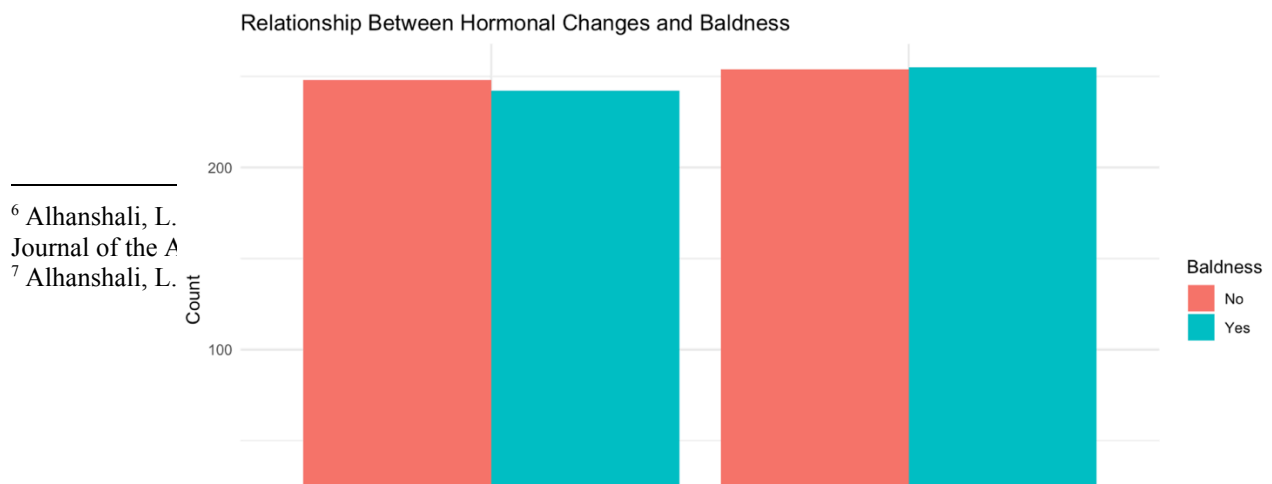
Figure 4 above shows the relationship between different kinds of medication and treatments and hair loss, with steroids showing the highest level of correlation with hair loss, and immunomodulators showing the least.

Noteworthy though, is that each category of treatment and medication indicates a significant relationship with hair loss.

The research on how medications affect alopecia is somewhat inconclusive. While there are strong correlations between certain medications and hair loss, other factors could also be at play. <sup>6</sup> Hair loss is generally considered a side effect of such medications, and the side effects of medications vary from one individual to the other. Medication-induced hair loss is rare and reversible.<sup>7</sup>



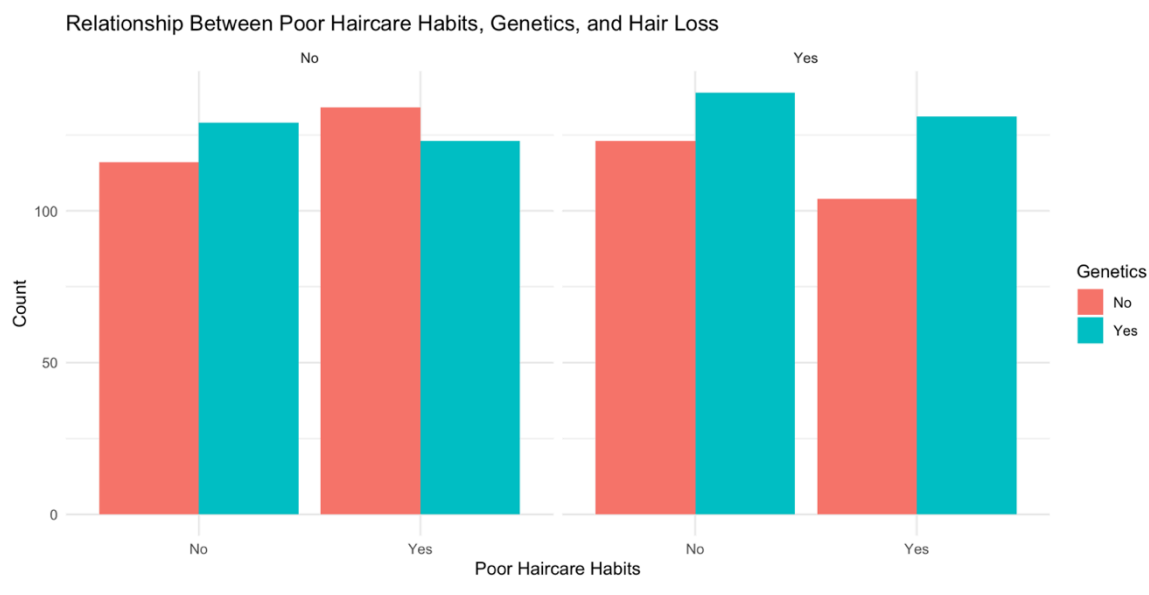
In populations with hair loss present, stress levels are fairly even, with high-stress levels having a slightly stronger correlation with hair loss than low and medium stress levels, suggesting that hair stress levels affect individuals differently and might not be a reliable predictor of hair loss.



<sup>6</sup> Alhanshali, L. Journal of the A

<sup>7</sup> Alhanshali, L.

The analysis of hormonal changes in the population doesn't indicate any strong correlation between hair loss and hormonal changes. Baldness is prevalent in the population with hormonal changes, albeit more prevalent in the population without hormonal changes. However, almost an equal percentage of the population with hormonal changes has no baldness present.



An analysis of the population, exploring poor hair care habits and hair loss in relation to genetics. For those with baldness present, and poor hair care habits, a significant portion of the population also has baldness genes, suggesting that poor hair care habits, coupled with baldness genes, can exacerbate the manifestation of hair loss. For those without poor hair care habits and hair loss present, genetics also seems to be a key factor in hair loss. The findings from this graph also suggest that genetics plays a more significant part in hair loss than poor hair care habits.

Traction alopecia, a form of alopecia caused by scarring, is most common in women who wear tightly pulled hairstyles—a practice that is damaging to both the hair and the scalp.<sup>8</sup>

<sup>8</sup> Akingbola, C. O., & Vyas, J. (2017). Traction alopecia: A neglected entity in 2017. *Indian Journal of Dermatology, Venereology, and Leprology*, 83 (6), 644-649. doi: 10.4103/ijdv1.IJDVL\_553\_16. PMID: 29035284

**C. Does age play a significant role in the onset or progression of baldness among individuals?**

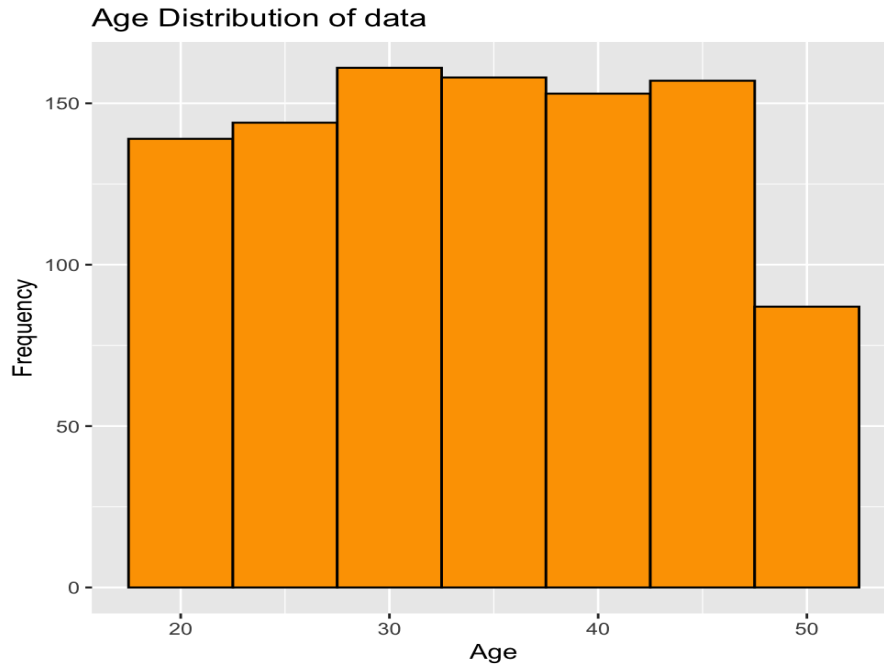
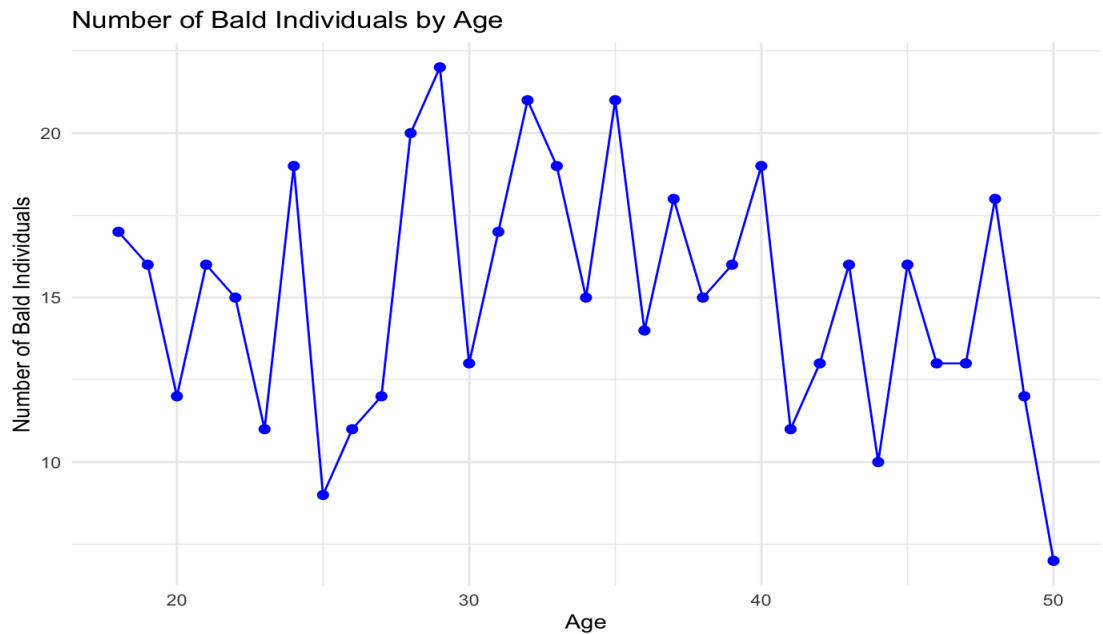


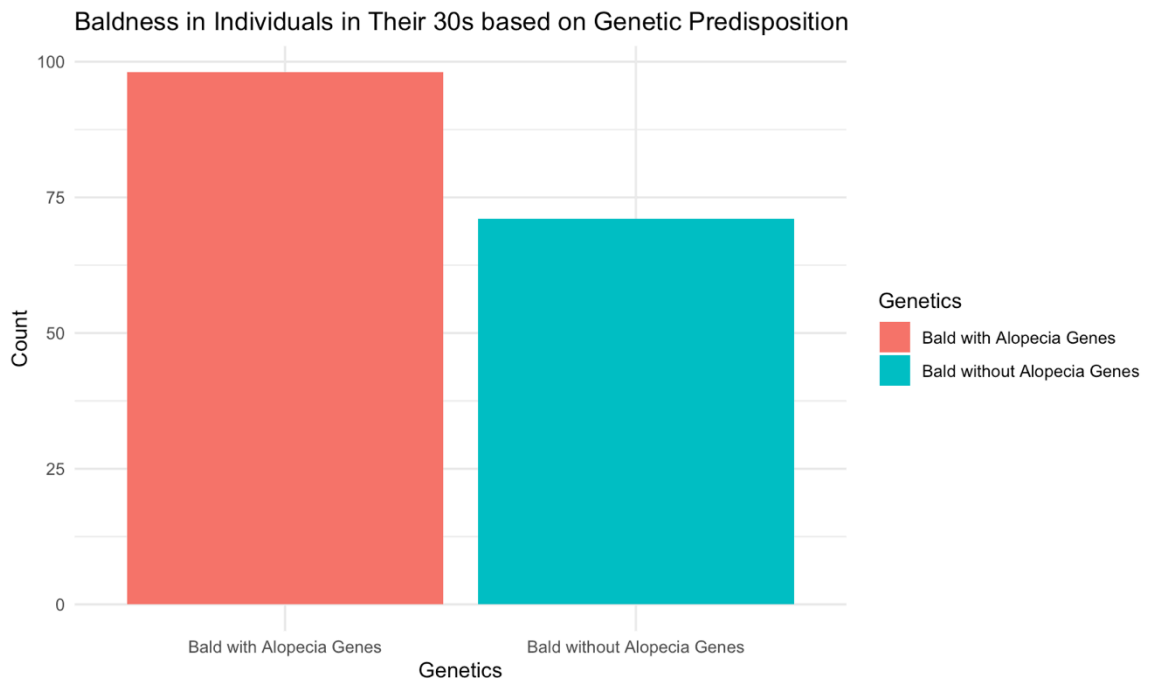
Figure 8: Age distribution of 1000 study participants

Age is typically one of the primarily assumed influences in the conversation of alopecia, thus, the first point of investigation for one of the data sets from Kaggle.com is the age ranges in the data. The analysis of the age ranges



in the data indicates that the individuals studied span from their teenage years to their 50s, with the smallest group being those in their 50s. The age distribution of individuals with alopecia present shows that most of them are in their late twenties, and the least of them are in their 50s. This could potentially be accounted for by the fact that individuals in their 50s are the smallest group out of the surveyed population, but it still calls for further investigation.

Out of 1000 individuals studied, a high percentage of individuals in their early twenties and late twenties have baldness present. Worthy of note is the somewhat even distribution of hair loss amongst all age groups. Individuals in their 40s and 50s, have a lower occurrence of baldness than younger age groups—a surprising finding, considering hair loss is often associated with aging.



Individuals in their 30s have the highest occurrence of hair loss, and further analysis of the data shows that most of them have alopecia in their genes. This finding potentially suggests that hair loss is no respecter of age and may not be primarily triggered by age alone. Hair loss associated with aging is genetic, as

aging alone is not a reliable predictor of hair loss. In individuals where hair loss progresses with age, androgenetic alopecia is usually the prevalent factor at play.<sup>9</sup>

## VII. Conclusion

- A. Androgenetic alopecia tends to manifest as one ages, but aging alone is not a reliable predictor for the onset of alopecia. However, a combination of aging and alopecia genes are more reliable predictor. Similarly, genetic factors alone are insufficient for predicting alopecia, as carrying alopecia genes does not guarantee that one will develop alopecia.
- B. Poor hair care practices, specifically, wearing tightly pulled hair styles, are a reliable predictor of traction alopecia, as wearing tight hair styles leads to damage of the hair follicles. Fortunately, this kind of alopecia is reversible if treated early.
- C. Lifestyle factors such as hormones and stress levels are not reliable predictors of alopecia, as these factors affect people differently.
- D. Similarly, medication history is not a reliable predictor of alopecia as hair loss as a side effect of medication is not a consistent occurrence.

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<sup>9</sup>Chen, W.-C., Hsu, W.-L., Chen, J. Y.-F., Shih, N.-H., & Wu, C.-Y. (2023). Second-to-fourth digit ratio and age predicting the severity of androgenetic alopecia: A cross-sectional study. *The Aging Male*, 25(1), 242-248. <https://doi.org/10.1080/13685538.2022.2119954>.

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## IX. Appendix

### A. Datasets

#### 1. Hugging Face:

[https://huggingface.co/datasets/Amod/hair\\_medical\\_sit](https://huggingface.co/datasets/Amod/hair_medical_sit)

Hair Disease	Medication	Duration	Severity of Disease	Side Effects	Disease Description
Alopecia Areata	Clobetasol propionate ointment	8 weeks	Moderate	Skin rash, Burning sensation, Itching	Alopecia areata is an autoimmune disease w
Alopecia Areata	Minoxidil solution	12 months	Severe	Scalp irritation, Unwanted hair growth, Dizziness	Alopecia areata is an autoimmune disease w
Alopecia Areata	Topical diphencyprone (DPCP)	6 months	Mild	Skin irritation, Redness, Blistering	Alopecia areata is an autoimmune disease w
Alopecia Areata	Clobetasol propionate foam	10 weeks	Moderate to severe	Dryness, Itching, Burning sensation	Alopecia areata is an autoimmune disease w
Alopecia Areata	Topical minoxidil solution	9 months	Mild to moderate	Scalp irritation, Unwanted hair growth, Dizziness	Alopecia areata is an autoimmune disease w
Alopecia Areata	Clobetasol propionate lotion	16 weeks	Moderate to severe	Skin rash, Burning sensation, Itching	Alopecia areata is an autoimmune disease w
Alopecia Areata	Betamethasone valerate lotion	8 weeks	Mild	Itching, Skin irritation, Dry skin	Alopecia areata is an autoimmune disease w
Alopecia Areata	Topical anthralin cream	12 weeks	Moderate to severe	Skin irritation, Staining of skin/hair, Temporary hair loss	Alopecia areata is an autoimmune disease w
Alopecia Areata	Intralesional triamcinolone acetonide injections	6 months	Severe	Skin atrophy, Bruising, Bleeding	Alopecia areata is an autoimmune disease w
Alopecia Areata	Topical flucinolone acetonide oil	16 weeks	Moderate to severe	Skin rash, Irritation, Acne	Alopecia areata is an autoimmune disease w
Alopecia Areata	Tacrolimus ointment	24 weeks	Mild	Burning sensation, Itching, Redness	Alopecia areata is an autoimmune disease w
Alopecia Areata	Topical bimatoprost solution	6 months	Moderate	Eye irritation, Skin darkening, Blurred vision	Alopecia areata is an autoimmune disease w
Head Lice	Permethrin	7 days	Moderate	Skin irritation, Itching, Redness	Head lice are tiny insects that live on the sc
Head Lice	Pyrethrin	5 days	Mild	Skin irritation, Itching, Tingling sensation	Head lice are tiny insects that live on the sc
Head Lice	Malathion	14 days	Severe	Skin irritation, Burning sensation, Dry skin	Head lice are tiny insects that live on the sc
Head Lice	Benzyl alcohol	2 days	Mild	Skin irritation, Dryness, Redness	Head lice are tiny insects that live on the sc
Head Lice	Ivermectin	1 day	Mild	Skin rash, Burning sensation, Itching	Head lice are tiny insects that live on the sc
Head Lice	Spinosad	2 days	Moderate	Skin irritation, Redness, Dry skin	Head lice are tiny insects that live on the sc
Head Lice	Lindane	3 days	Severe	Skin rash, Seizures, Dizziness	Head lice are tiny insects that live on the sc
Head Lice	Tea tree oil	7 days	Mild	Skin irritation, Redness, Dry skin	Head lice are tiny insects that live on the sc
Head Lice	Dimethicone	2 days	Moderate	Skin irritation, Redness, Dry skin	Head lice are tiny insects that live on the sc
Head Lice	Natural maritimum	14 days	Severe	Nausea, Headache, Dry mouth	Head lice are tiny insects that live on the sc
Head Lice	Neem oil	7 days	Mild	Skin irritation, Redness, Itching	Head lice are tiny insects that live on the sc
Head Lice	Cetaphil cleanser	14 days	Moderate	Skin irritation, Dryness, Redness	Head lice are tiny insects that live on the sc
Head Lice	Lavender oil	7 days	Mild	Skin irritation, Nausea, Headache	Head lice are tiny insects that live on the sc
Head Lice	Eucalyptus oil	7 days	Severe	Skin irritation, Nausea, Headache	Head lice are tiny insects that live on the sc
Head Lice	Neem oil	7 days	Moderate	Skin irritation, Redness, Itching	Head lice are tiny insects that live on the sc
Head Lice	Lice comb	7 days	Mild	Scalp irritation, Headache, Dizziness	Head lice are tiny insects that live on the sc
Head Lice	Dimethicone	7 days	Moderate	Skin irritation, Redness, Dry skin	Head lice are tiny insects that live on the sc
Head Lice	Olive oil	7 days	Moderate	Greasy hair, Skin irritation, Redness	Head lice are tiny insects that live on the sc
Head Lice	Coconut oil	7 days	Mild	Greasy hair, Skin irritation, Redness	Head lice are tiny insects that live on the sc
Telogen effluvium	Minoxidil	6 months	Moderate	Scalp irritation, Unwanted hair growth, Dizziness	Telogen effluvium is a scalp disorder charac
Telogen effluvium	Ricin	3 months	Mild	Nausea, Diarrhea, Skin rash	Telogen effluvium is a scalp disorder charac

#### 2. Kaggle:

<https://www.kaggle.com/datasets/amitvkulkarni/hair-health>

Id	Genetics	Hormonal C	Medical Con	Medications	Nutritional D	Stress	Age	Poor Hair Ca	Environment	Smoking	Weight Loss	Hair Loss
133992	Yes	No	No Data	No Data	Magnesium d	Moderate	19	Yes	Yes	No	No	0
148393	No	No	Eczema	Antibiotics	Magnesium d	High	43	Yes	Yes	No	No	0
155074	No	No	Dermatosis	Antifungal Cr	Protein defic	Moderate	26	Yes	Yes	No	Yes	0
118261	Yes	Yes	Ringworm	Antibiotics	Biotin Deficir	Moderate	46	Yes	Yes	No	No	0
111915	No	No	Psoriasis	Accutane	Iron deficient	Moderate	30	No	Yes	Yes	No	1
139661	Yes	No	Psoriasis	Antibiotics	Magnesium d	Low	37	No	Yes	No	Yes	1
169255	Yes	Yes	No Data	No Data	Selenium def	High	40	Yes	No	No	No	1
112032	Yes	No	Dermatosis	Chemothera	Omega-3 fatt	High	35	Yes	No	Yes	No	0
140785	Yes	No	Eczema	Steroids	Selenium def	Moderate	19	No	No	Yes	Yes	1
187999	No	Yes	Ringworm	Rogaine	Magnesium d	Moderate	49	Yes	Yes	Yes	No	0
118858	Yes	Yes	Eczema	Blood Pressu	Biotin Deficir	High	26	Yes	Yes	Yes	No	0
159158	No	Yes	Alopecia Are	Accutane	Zinc Deficier	High	48	No	No	No	No	1
156086	Yes	Yes	Scalp Infecti	Immunomod	Biotin Deficir	Moderate	20	No	Yes	Yes	No	1
178256	No	No	Psoriasis	Antibiotics	Vitamin D De	High	30	Yes	Yes	Yes	Yes	0
150154	Yes	No	Eczema	Antibiotics	Biotin Deficir	High	34	Yes	Yes	No	Yes	0
130552	Yes	Yes	Scalp Infecti	Rogaine	Vitamin D De	Moderate	29	Yes	No	No	Yes	0
116190	Yes	No	Seborrheic D	Antidepressa	Vitamin D De	High	46	Yes	Yes	No	Yes	0
194441	No	Yes	Dermatosis	Antibiotics	Zinc Deficier	Low	19	Yes	No	No	Yes	1
147404	Yes	Yes	Dermatosis	Accutane	Biotin Deficir	Low	26	No	No	Yes	No	0
136709	Yes	Yes	Seborrheic D	Chemothera	Vitamin A De	High	46	Yes	Yes	No	Yes	1
187362	Yes	Yes	Seborrheic D	Accutane	Protein defic	High	46	No	Yes	No	Yes	1
133804	No	No	No Data	Chemothera	Zinc Deficier	High	20	No	Yes	Yes	Yes	1
148974	Yes	Yes	Psoriasis	Antibiotics	Vitamin D De	Low	29	No	No	Yes	Yes	0
116818	No	Yes	Scalp Infecti	Antidepressa	Vitamin D De	High	37	No	No	Yes	No	1
142062	No	Yes	Dermatitis	Antibiotics	Protein defic	High	33	Yes	Yes	No	No	0

<https://www.kaggle.com/datasets/brijlaldhankour/hair-loss-dataset>

Olawode - Baldness

total_protein	total_keratin	hair_texture	vitamin	manganese	iron	calcium	body_water	stress_level	liver_data	hair_fall
312	100	14	249	87	55	333	44	41	368	4
52	207	3	425	387	1	182	26	65	41	1
170	197	11	140	199	91	414	30	54	90	4
256	334	19	358	120	3	35	48	45	65	2
309	185	58	207	329	301	345	23	90	346	4
251	266	76	316	69	131	142	62	96	273	2
467	135	33	325	348	172	33	3	34	16	1
458	57	64	304	269	290	384	97	23	175	4
271	188	32	29	308	487	65	72	47	215	5
130	113	15	277	193	372	452	98	54	77	5
359	317	81	486	187	357	31	31	68	3	0
96	203	31	126	329	358	40	10	14	237	2
140	336	81	301	439	35	498	71	91	307	3
316	282	25	225	351	20	255	6	93	28	5
325	293	28	260	290	334	136	35	46	33	4
127	495	89	366	290	232	235	42	80	177	2
5	186	25	51	157	342	274	38	36	264	0
243	321	71	277	221	25	173	81	36	26	2
103	454	74	438	459	35	393	98	79	178	3
251	268	86	210	130	62	281	26	83	295	3
308	353	8	431	368	294	348	70	75	406	0
119	402	24	136	451	265	459	67	91	80	5
314	353	82	133	358	169	499	65	77	81	1
198	396	45	207	295	330	119	7	24	416	3
437	434	78	214	262	7	235	92	97	178	4
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