

Available online on 15 Jun, 2024 at <http://www.hjhs.co.in/index.php/hjhs>

Himalayan Journal of Health Sciences

Published by Himalayan Group of Professional Institutions

Associated with Himalayan Institute of Pharmacy

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Research Article



Consumer behavior towards Ayurvedic products in India

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Abstract

Introduction: Ayurveda is a traditional Indian system of medicine that focuses on holistic health and balance through natural remedies, diet, and lifestyle practices. Many skin and hair care products are available in the Indian markets. Yet, consumers are confused with brand authenticity, 100% natural or not? Reliability of the quality in the absence of proper third-party verification.

Objective: This study examines this intriguing domain by probing consumer perceptions, experiences, and their ability to discern authentic natural products from those containing synthetic chemicals. The study is based on both primary and secondary data.

Material & methods: Primary data is collected through structured questionnaires from a cross-section of 260 households in year 2022, and secondary data is collected from the Amazon ratings.

Result & Discussion: The results of the primary survey show that 58% of respondents said they were unsure whether the ayurvedic or herbal hair and skin care products they use contain chemical ingredients. Results of the secondary survey show that purchasing decisions are not made solely based on a product's chemical-free ingredients; other considerations also play a role.

Conclusion: Overall, higher share of five-star rating for ayurvedic products, indicates consumers are happy about the products, however, the market concentration for the ayurvedic products is high, and there is a good scope for new entrants into the market.

Keywords: Skin Care, Hair Care, Ayurveda, Herbs, Consumer Behavior, Consumer Choice

Article Info: Received 20 May 2024; Review Completed 14 Jun 2024; Accepted 15 Jun 2024



Cite this article as:

Rakhi NS, Sneha AV, Reddy AA. Consumer behavior towards Ayurvedic products in India. Himalayan J H Sci [Internet]. 2024 Jun 15 [cited 2024 Jun 15]; 9(2):31-44. Available from: <http://www.hjhs.co.in/index.php/hjhs/article/view/208>

DOI: 10.22270/hjhs.v9i2.208

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1. Introduction

Ashtanga Hridayam refers to Ayurveda (1) as "Ayuranena veti iti Ayurvedah," which translates to "Ayurveda is the wisdom of life." Ayurveda is a daily regimen that guides all areas of life, including physical and emotional health. Ayurveda, at its highest level, makes an individual physically and intellectually robust for spiritual enlightenment. Ayurveda takes a holistic approach to beauty, considering not just the appearance of skin and hair but also their underlying health and connection to the whole body and mind. (2) Numerous references (3) to various skin and hair disorders, (4) their treatments, and mentions of good skin and hair care exist in Ayurveda. Unlike contemporary cosmetics, similar references are included in traditional ayurvedic literature as part of the advantages of certain treatments like Panchakarma or the effects of specific medications like *Narasimha Rasayana* (5) or *Thriphala*. (6)

The Indian Cosmetic Act of 1940 (7) defines cosmetics as "any item meant to be rubbed, poured, sprinkled, sprayed, or otherwise applied to the human body or any part thereof for cleansing, beautifying, encouraging attractiveness, or changing the appearance". This includes any item intended for use as a cosmetic component. Herbal cosmetics are those that incorporate the entire plant, as well as leaves, flowers, roots, or other plant components or phytochemicals. Ayurvedic medicines, however, may also contain heavy metals like gold or silver, as well as plants or animal products. (8) The Indian ayurvedic market was estimated to be worth USD 6.3 billion (INR 51550 crore) in 2021 and is expected to reach USD 18.8 billion (INR 1,53,690 crore) by 2027, with a compound annual growth rate (CAGR) of 19.8% from 2022 to 2027, according to *Research and Market's* report titled "India Ayurvedic Products Market: Industry Trends, Share, Size, Growth, Opportunity, and Forecast 2022–2027". Further,

there is a significant potential for exporting ayurvedic beauty products from India.

1.1 Global market size

The global herbal beauty products, which includes skin care, hair care, and fragrance was valued at USD 78.5 billion in 2019 and is projected to grow at a CAGR of 5.2% from 2020 to 2027. (9,10) Rising focus on appearance and increased preference for herbal products among customers world over is augmenting the market expansion. Further, the increased demand for chemical-free beauty products and cruelty-free cosmetics, which ayurveda inherently attributes to, is boosting the market growth. The growing preference for herbal ingredients that improve skin and hair care has been a major driver of market growth. The women's segment accounted for 72.4% of total sales revenue in 2019. (10)

1.1.1 Skin care

The skincare segment contributed 36.6% of total sales revenue in 2019 and is expected to grow much faster in the coming years. The growth is attributed to increasing awareness of the benefits of herbal beauty products towards skin improvement, acne reduction, and the removal of fine lines to slow down ageing processes.

1.1.2 Hair care

The hair care segment contributed 35.8% of total sales revenue in 2019 and is expected to grow at a 5.4% CAGR from 2020 to 2027. Herbal hair care products have been witnessing significant growth, particularly shampoos and conditioners are expected to drive the overall growth of the market. These herbal hair care products are formulated with natural plant extracts that promote healthy hair growth. In addition, these products also specify on significant reduction in hair loss, clean scalp naturally, and being suitable for all hair types.

Based on different studies, (11) the consumption of ayurvedic products by Indian households is low but is increasing. To encourage the use of ayurvedic products, the government of India has introduced two major initiatives: Quality Council of India's (QCI) accreditation programme and the Drugs Controller General of India's (DGCI) grant of a Certificate of Pharmaceutical Products (CoPP) for the export of ayurvedic products. For ayurvedic products that adhere to domestic rules, QCI awards the AYUSH *Standard Mark*, (12), and those that adhere to international criteria are awarded the AYUSH *Premium Mark*. (13,14) Previous studies had demonstrated how people in ancient (15-18) times used knowledge of Ayurveda to enhance their skin and hair. The ayurvedic text *Ashtanga Hridayam* (19) contains a substantial discussion of *Dinacharya* and *Ritucharya* (20) Even though the focus is on maintaining a healthy body and mind, it is explicitly stated in several parts of the text that these activities can improve the health of the skin and hair. There are different studies conducted on cosmetology in Ayurveda. There are some studies on the increasing tendency among Indian consumers to go with natural cosmetics (both ayurvedic and herbal). (21-23) Previous studies investigated a range of issues pertaining to the ayurvedic and herbal skin and hair care segments of the Indian market.

Although, according to the World Health Organisation (WHO), 60% of the world's population relies on herbal products and about 80% of the population in developing countries depends on herbal products for their primary care, (24-26) very few in-depth studies exist on Indian customers' preferences, consumer awareness about quality parameters, and authenticity of ayurvedic and herbal skin and hair care products that are currently available in the market.

We also noticed a few other gaps in the previous studies, including the level of consumer awareness and knowledge regarding the presence of synthetic chemical ingredients in products marketed as ayurvedic or herbal; whether a product's naturalness becomes the only factor in a purchase decision; and whether the ayurvedic and herbal skin care market is open to new entrants. We also observed that there were limited studies about rules and regulations in the Indian ayurvedic and herbal skin and hair care sectors. Further, there is a growing penetration of e-commerce in the sale of herbal and ayurvedic products, which is not studied in the literature. Post-COVID, most consumers turned to e-commerce, as it offered door-to-door delivery, substantial discounts, and the availability of a wide range of products through a single platform. Access to smart phones and online shopping is expected to have a positive impact on the consumption of ayurvedic products. Understanding consumer preferences and concerns about Ayurvedic and herbal skin and hair care products could help manufacturers develop more effective and appealing products.

2. Objective of the study

Addressing a critical gap in the understanding of consumer preferences in the Indian Ayurvedic and herbal hair and skin care market, this study investigates two primary objectives. First, it delves into customer perceptions of these products, employing a structured questionnaire to assess user sentiments and satisfaction levels. This in-depth exploration aims to illuminate the key factors influencing consumer choices within this growing market segment. Second, the study examines the potential influence of a product's complete absence of synthetic chemical ingredients (27) on consumer ratings. By analysing customer reviews on the Amazon platform, this research sheds light on e-commerce trends and sheds light on the potential importance of product purity in purchasing decisions. Therefore, the study contributes to the existing body of knowledge by offering valuable insights into consumer motivations and preferences within the dynamic Indian Ayurvedic and herbal hair and skin care market.

3. Materials and methods

A mixed-methods approach was employed to investigate consumer awareness and feedback on ayurvedic skin and hair care products.

Primary data collection

Primary data was collected via a structured questionnaire administered to 600 households across Dhanbad, Delhi, Amritsar, Bangalore, and Kerala in March 2022. Customer contact details were obtained from

stores specializing in ayurvedic/herbal products, focusing on individuals who made purchases within the prior month (n = 2000). After informed consent was obtained, 600 households were randomly selected and invited to participate. Three reminders were issued, resulting in 320 completed questionnaires and 260 fully answered questionnaires (response rate = 13%). Details of the sampling framework are presented in Table 1. The sample skewed towards middle-aged respondents and exhibited a male bias. Participants were informed of the survey's

purpose, concepts, and data handling procedures. Confidentiality was ensured by not collecting personal identification information. To enhance clarity and understanding, the questionnaire employed a multiple-choice format and underwent pre-testing with a group of 15 individuals, leading to subsequent modifications. Additionally, secondary data was gathered from Amazon's e-commerce platform to analyze customer feedback.

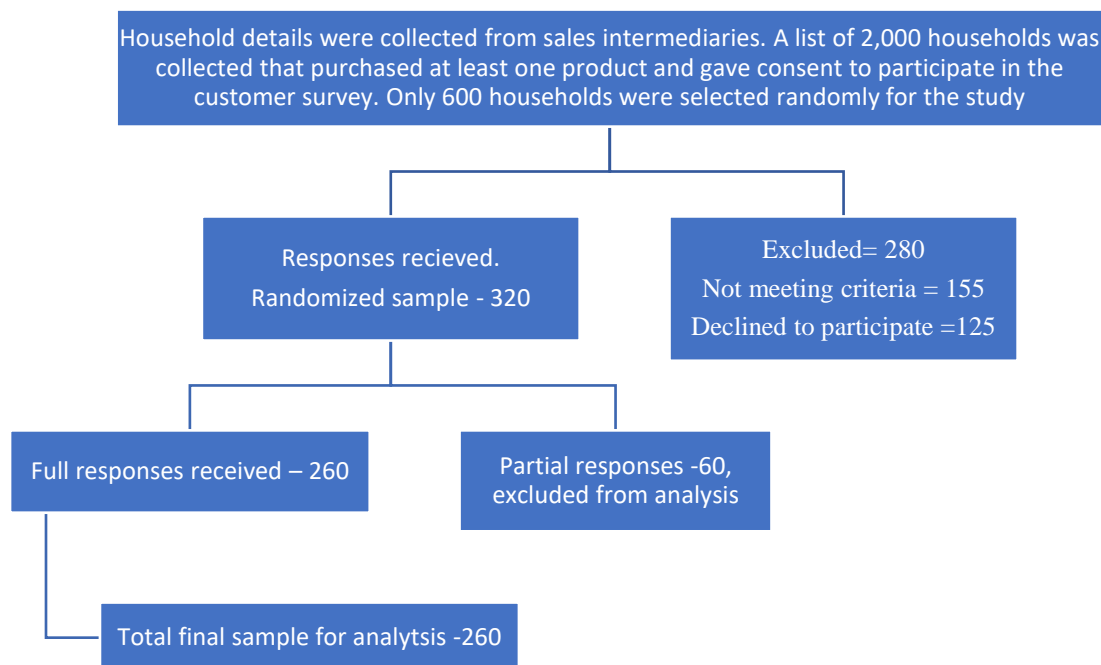


Figure 1. Primary data collection flow chart

Table 1. Basic characteristics of the sample respondents from the primary survey

Age group	%
<21 years	6.6
21 to 45 years	69.2
>45 years	24.2
Gender	
Male	55.0
Female	44.6
Other	0.4

Sub-sample selection and questionnaire:

A sub-sample of 90 respondents with graduate degrees was selected based on their comprehension of product categories, customer ratings, and ability to utilize Excel sheets. These individuals anonymously completed a questionnaire within an Excel file, evaluating and rating selected ayurvedic and herbal hair and skincare products based on personal experience. Approximately 50 responses were received, facilitating the identification of 42 hair and skincare items claiming ayurvedic or herbal properties.

Secondary data on customer ratings on an e-commerce site:

Utilizing the identified product list, customer ratings were retrieved from Amazon's review site as of January 1,

2023. Products listed on the Amazon e-commerce platform were prioritized for analysis and subsequently categorized as hair care (divided into hair oil, shampoo, and other) or skincare (divided into cream, face pack, and other). Within each sub-category, the seven most popular products (based on customer ratings) were chosen for further economic analysis.

Analysis methods:

To understand customer preferences, consistency, and variability in ratings, a combined approach was employed:

- **Simple tabular analysis:** Presenting data in tables for clear visualization.
- **Chi-squared (χ^2) tests:** Evaluating potential associations between categorical variables.
- **Coefficient of variation (CV%):** Quantifying the relative dispersion of data points within each group.

4. Results

The results section is divided into primary data and secondary data analysis to understand the consumer behavior towards ayurvedic and herbal products.

4.1 Results from the primary data

Figure 2 shows that more than 70% of the respondents said they prefer ayurvedic products and use them for skin

and hair care (statistically significant when applied Chi-squared test). This reveals that consumers have a strong preference for products made with natural ingredients.

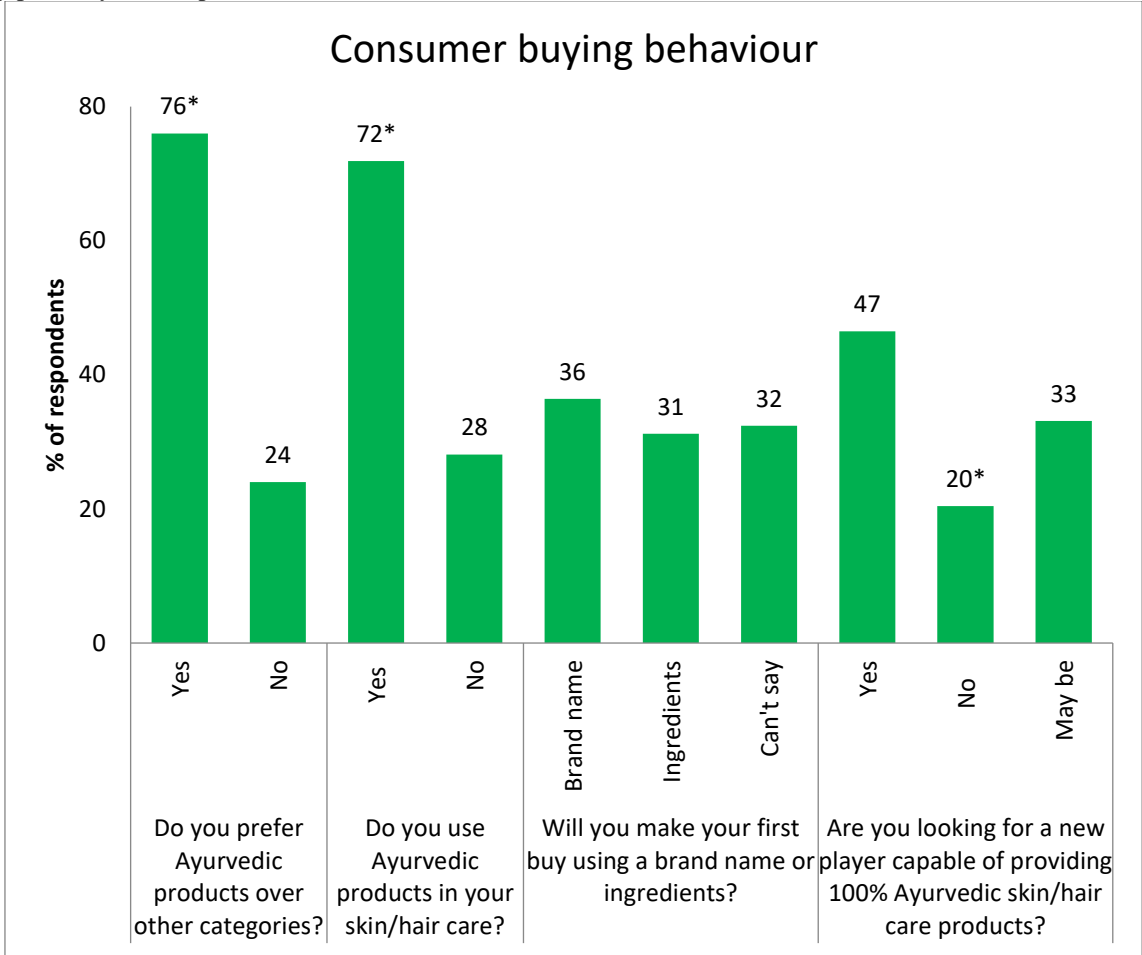


Figure 2. Customer buying behavior (% of total respondents).

Note: *indicates that there is a significant difference in frequency between groups at 5% level by using χ^2 tests.

About 36% of the respondents were brand-loyal consumers. Before making a purchase decision, 31.2% of consumers consider the components. People who pay attention to ingredients are generally educated and informed consumers who are aware of the benefits and/or negative consequences of the substances. (28,29) A high-quality product can entice these customers and foster future brand loyalty. About 47% of respondents seek new products offering authentic ayurvedic hair and skin care products. The target market for genuine ayurvedic products is made up of these 47% as well as the 31.2% who are focusing on ingredients. (30) It shows that there are substantial loyal consumers for authentic ayurvedic products.

Figure 3 shows respondents' opinions on herbal and ayurvedic skin and hair care products. About 74% of respondents are certain of the nature of the product they are using; the result is statistically significant at 5% level. This shows that the majority of consumers read product labels carefully before making purchases to see whether they are Ayurvedic, herbal, or non-natural products. The findings concur with earlier studies. (31)

About 38% of respondents are habitual consumers, and 62% are using ayurvedic products regularly, weekly, or

monthly. 62% of respondents look for both effectiveness and quality while making purchase decisions, whereas 14% look only for effectiveness. But it is to be noted that effectiveness may or may not be due to the use of authentic ayurvedic products. It suggests that customer education is essential to understanding the causal link between the quality of products and their effectiveness. Many herbal and ayurvedic products take a while to provide explicit results and need to be used regularly. In ayurvedic market, only effective products sustain irrespective of the company size. (32) For example, when we consider ayurvedic hair-regrowth products, in cases of severe hair loss, most natural products need to be used continuously over an extended period of time. Not adhering to the recommended usage time might affect the efficacy of the product. Customers choose skin care products that make noticeable changes right away. (33-36) The sellers are prompted to add chemicals to the products to cater to such customer behavior, in spite of their long-term adverse effects. This type of adulteration of ayurvedic products to mislead consumers is very common, (33-36) which needs to be detected and avoided through effective implementation of regulations.

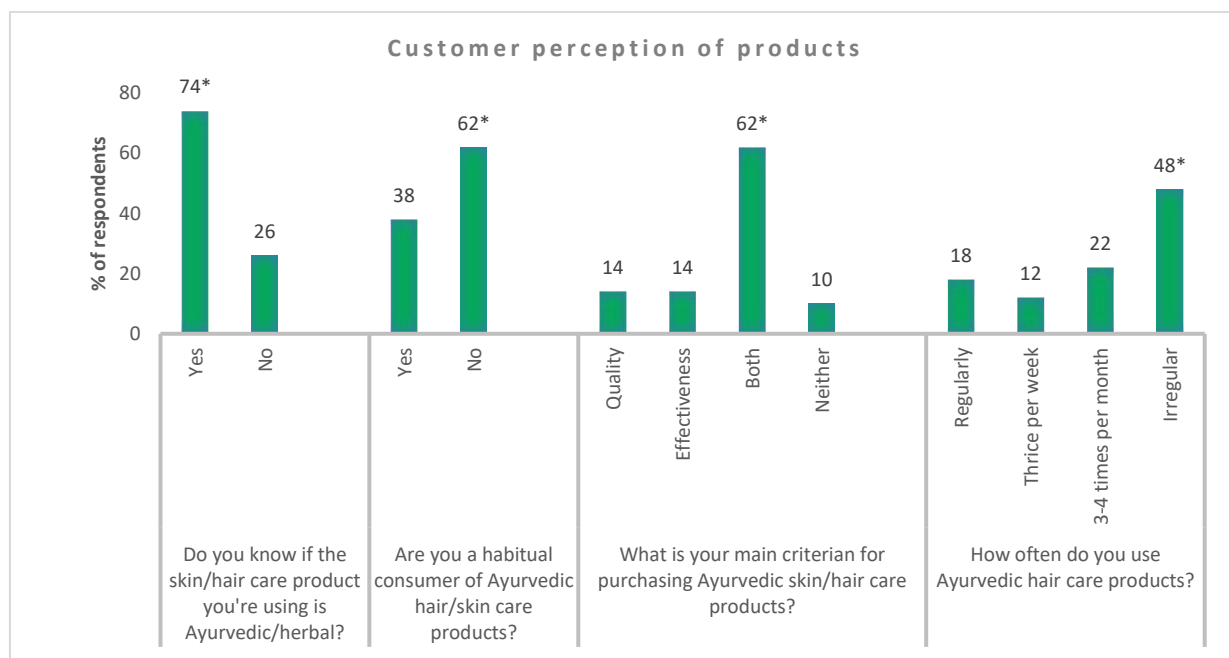


Figure 3. Customer perception of products

Note: *indicates that there is a significant difference in frequency between groups at 5% level by using χ^2 tests.

The experiences of respondents with herbal and ayurvedic skin and hair care products are shown in Figure 4. In total, 44% of respondents said they were unhappy with the results. It may be due to the ineffectiveness of the product itself, even though consumers used it as per the recommendation, or it may be due to misuse. (37) This is significant because it demonstrates the value of providing customers with product information, its right use, and its effectiveness. The user must adhere to all recommendations, especially those about how frequently

and in what quantity they should use the product. 15% of respondents reported experiencing negative impacts. 96% of respondents said that they have not experienced any severe adverse effects, which is also significant at 5% level. Most of the natural products are generally well tolerated by all individuals, and adverse effects are rare. Therefore, it is crucial that producers encourage users to do patch tests and provide explicit instructions on how to use the products.

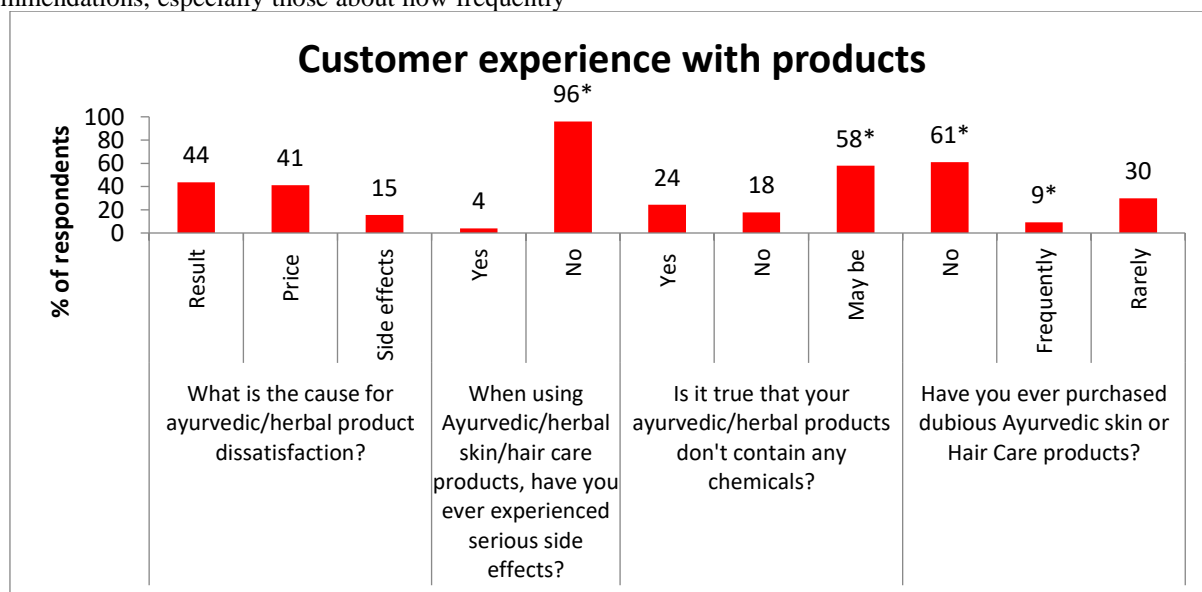


Figure 4. Customer experiences with products

Note: *indicates that there is a significant difference in frequency between groups at 5% level by using χ^2 tests.

From Figure 4, it is quite evident that 58% of respondents are unsure whether the herbal and/or ayurvedic items they use are chemical-free. This is a concerning trend because people typically choose ayurvedic or herbal products under the impression that they are completely natural. The overwhelming percentage of respondents who expressed

uncertainty suggests that consumers are concerned about the quality of the herbal and/or ayurvedic items available on the market. However, 61% of the respondents claim to have never purchased a dubious ayurvedic or herbal product. It demonstrates that consumers are unable to distinguish between genuine and counterfeit ayurvedic

products. Dubious ayurvedic or herbal products are those that swing between chemical-based cosmetics and natural cosmetics. Such products may contain one or more synthetic chemicals in varying quantities. (38)

4.2 Results from the secondary data (customer rating and popularity)

The two product categories—herbal/ayurvedic hair care and skin care—are studied for their customer ratings. Hair care products are further sub-categorised as hair oil, shampoo, and other hair products (like styling gel, hair masks, serums, hair creams, conditioners, and herbal powder-henna), and skin care products are sub-categorised as cream, face pack, and other skin care products (body lotions, oils, face washes, and toners). In total, there are 21 product categories selected to collect customer reviews.

4.2.1 Hair products

Hair products are categorised into (i) hair oil products, (ii) hair shampoo products, and (iii) other hair products.

Hair oil products

Table 2 provides a list of herbal, or ayurvedic hair oil products considered for analysis. In the table, the total number of ratings shows the popularity of the product; a higher number indicates more popularity, and vice versa. Whereas an average rating indicates the average level of

satisfaction of customers on a scale of 1 to 5, with 5 indicating the highest satisfaction and 1 showing the lowest satisfaction. Results shows that Indulekha Bhringa Hair Oil is more popular (38% of all ratings) followed by Biotique (26%) and Parachute (25%) within hair oil group. Together, these three products received 88% ratings, which reflects high market concentration. Indulekha was introduced as a true ayurvedic hair oil with low pricing strategy. The brand Biotique is regarded as an herbal brand, and its products fit into that category. The coconut oil sold under the name Parachute is well-known, but it is a relatively new entrant to the ayurvedic products, and substantiates its lower rating than other brands. Indulekha is positioned as a premium brand at Indian National Rupee (INR) 5.99 per ml, and it is entirely natural. The price difference between Indulekha and other brands is huge. The price of Parachute Ayurvedic Hair Oil is INR 0.84/ml, Navaratna Ayurvedic Cool Hair Oil is INR 0.82/ml, and Bajaj Brahmi Amla Ayurvedic Hair Oil is INR 0.56/ml. A higher share of 5-star ratings and a higher average rating for all these products indicate higher consumer satisfaction. These three oils are quite comparable in terms of price as well as the distribution of overall ratings. Although the price of Induleka hair oil is higher, it has a larger number of customer ratings compared to all products in this category, which indicates non-price factors like quality and all-natural ingredients are contributing to its popularity.

Table 2. Customer ratings for hair oils

Parameters	Rating								
	5 star (%)	4 star (%)	3 star (%)	2 star (%)	1 star (%)	Total (%)	Average rating (1-5)	CV (%)	Total Number of rating
Indulekha Bhringa Hair Oil	50*	25	14	5*	6*	100	4.08	93	12,987
Biotique Bio Bhringraj Therapeutic Oil	51*	26	13	4*	5*	100	4.11	98	8,846
Parachute Ayurvedic Hair Oil	55*	27	11	3*	4*	100	4.26	109	8,463
Bajaj Brahmi Amla Ayurvedic Hair Oil	53*	27	11	4*	5*	100	4.19	103	3,172
Navaratna Ayurvedic Cool Hair Oil	53*	27	13	3*	5*	100	4.23	103	1,013
Chandrika Ayurvedic Hair Oil	32	12	36	0	20	100	3.36	73	11
Amrit Navjeevan Herbal Hair Oil	29	14	28	0	30	100	3.15	65	10
Mean	46*	23	18	3*	11*	100	4.15	Total	34,502

Note: 5 star is the highest, and 1 star is the lowest customer rating. The total number of ratings reveals the popularity of the product; more customer ratings reflect higher popularity, and vice versa; and CV (%) reflects the variability in consumer ratings; a higher CV indicates an unstable preference by consumers. *indicates that there is a significant difference in actual frequency of cell compared to expected frequency of 20% at 5% level by using χ^2 tests.

Compared to Navaratna Hair Oil, Parachute Ayurvedic Hair Oil is eight times more popular among customers. Quinizarine Green SS, a dye used to impart a greenish colour, is listed as an ingredient in Navaratna Oil. Whereas, Ayurvedic hair oil from Parachute claims to be all-natural.

The least popular products are Amrit Navjeevan Herbal Hair Oil (₹2.15/ml) and Chandrika Ayurvedic Hair Oil (₹3.63 per ml), with a low average rating but with a relatively higher price and positioned as premium products where competition is higher, and consumers are highly brand conscious.

In general, the more popular products have a lower percentage of 1-star reviews compared to the less popular ones. Similarly, products with more 5-star ratings

received the lowest variability in ratings, indicating super-star products are consistently preferred by consumers. The results are also statistically significant.

The average rating for Navaratna, Bajaj, and Parachute oils is higher than the mean. All these oil brands are widely available in the market. At least 80 percent of each of these brands' overall ratings are composed of ratings of 5 and 4. These brands have a higher percentage of happy customers than the other hair oils on the list. Bajaj Brahmi Amla Ayurvedic Hair Oil contains Colour CI Nos. 61565, 26100, and 12700, and Navaratna Ayurvedic Cool Hair Oil contains Quinizarine Green SS. Parachute Ayurvedic Hair Oil and Amrit Navjeevan Herbal Hair Oil ingredient lists are full of natural ingredients, but these are not yet established as popular brands.

Hair shampoo products

Among the shampoo category, Indulekha (44% of total ratings), Dabur (33% ratings), and Tre semme (13% of ratings) are the most popular brands together, receiving 91% ratings, which reflects very high market

concentration (Table 3). As a result, these three have a sizable base of satisfied customers. The least popular and least satisfying products are Good Hair Ayurvedic Anti-Dandruff Shampoo and Nakshe by Paras Ayurvedic Coconut Shampoo.

Table 3. Customer ratings for shampoo

Parameters					Rating					
Product details	5 star (%)	4 star (%)	3 star (%)	2 star (%)	1 star (%)	Total (%)	Weighted rating (1-5)	CV (%)	Total Number of ratings	
Indulekha Bringha Ayurvedic Shampoo	54*	26	12	3*	5*	100	4.21	105	24,829	
Dabur Vatika health Shampoo (claiming as herbal)	52*	27	12	4*	5*	100	4.17	101	18,653	
TRESemme Botanique Nourish & Replenish Shampoo	58*	26	10	3*	3*	100	4.33	116	7,512	
Mamaearth Bhringamla Shampoo - with Bhringraj & Amla	44*	26	15	6*	9*	100	3.90	77	3,493	
Forest Essentials Hair Cleanser, Bhringraj and Shikakai	54*	22	12	5*	7*	100	4.11	101	1,390	
Good hair Ayurvedic anti-dandruff shampoo	34	13	18	10	25	100	3.21	48	37	
Nukshe by Paras ayurvedic coconut shampoo	27	18	14	9	31	100	2.98	46	21	
Mean	46*	23	13	6*	12*	100	4.19	Total	55,935	

Note: 5 star is the highest, and 1 star is the lowest customer rating. The total number of ratings reveals the popularity of the product; more customer ratings reflect higher popularity, and vice versa; and CV (%) reflects the variability in consumer ratings; a higher CV indicates an unstable preference by consumers. *Indicates that there is a significant difference in actual frequency of cell compared to expected frequency of 20% at 5% level by using χ^2 tests.

In a purchase, unit price is a significant factor. The more popular products like Indulekha Shampoo (₹1.35 per ml), Dabur Vatika Shampoo (₹0.58 per ml), Tresemme Shampoo (₹1.02 per ml), and Mamaearth Shampoo (₹1.39 per ml) are priced closely. Although Forest Essentials Hair Cleanser (₹8.5 per ml) is the most expensive of the chosen products, its mini size (50 ml) is affordable for the majority of customers and is reasonably popular. Only this product is offered in such a minimal quantity among the ones chosen. In the shampoo category, most of the brands wish to market their products in the affordable category by reducing prices or selling small sachets.

Tresemme Shampoo and Indulekha Shampoo have average ratings that are higher than the mean rating of the category. Each of these brands' overall ratings is made up of at least 80 ratings above 4 star. It suggests that they have a sizable number of satisfied clients. Due to the lower frequency of lower ratings (1- and 2-star) by customers for Tresemme Shampoo, Dabur Vatika, Mamaearth, and Forest Essentials, they still command a significant share of the market. But on the other hand, Ayurvedic anti-dandruff (*Good-hair*) received lower ratings (1-star) and unhappy customers, even though it is all-natural. Many consumers lamented the dryness of their hair after use. It indicates that customers are unable to distinguish between all-natural and non-natural shampoos and are therefore unable to purchase all-natural at the premium price they deserve. Hence, there is a need for consumer education and proper labelling so that

customers can identify all-natural products for the premium price.

Other hair products

Other hair products are not that popular on the Amazon platform, and their low overall average rating reflects lower acceptance. In comparison to the other items on the list, 'Mamaearth Bhring Amla Conditioner' is more popular with 45% total ratings, followed by Himalaya men anti-dandruff cream (21%), and MOHA: Herbal Hair Serum (18%); together they share 84% of total ratings, which reflects high market concentration. Inatur Amla Hair MaNat's Hair Mask, a natural product has more combined 4-star and 5-star ratings, as well as the highest average ratings. But most other products in this category have insignificant sales. It indicates online markets are not developed or consumers are not aware of these products.

4.2.2 Skin Care products

Skin care products are categorised into (i) cream products, (ii) face-pack products, and (iii) other skin products.

Cream products

Cream products are popular among both genders and for various purposes. Bajaj Nomarks-Ayurvedic Anti-Marks Cream, which received 34% of total ratings; Neuhack Healthcare Pigmed Cream (26%) and Jovees Ayurveda anti-blemish pigmentation cream (14%) are more popular products, which together received 74% of

total ratings, reflecting some market concentration (Table 5).

Table 4. Customer ratings for other hair products

Parameters	Rating								
	5 star (%)	4 star (%)	3 star (%)	2 star (%)	1 star (%)	Total (%)	Weighted rating (1-5)	CV (%)	Total Number of ratings
Mamaearth Bhring Amla Conditioner	45*	26	14	6*	9*	100	3.92	80	1,304
Himalaya men anti dandruff cream	50*	22	16	6*	6*	100	4.04	91	617
MOHA: Herbal Hair Serum	48*	25	13	8*	7*	101	4.02	85	525
Khadi naturals Ayurvedic black henna	30	17	14	8	31	100	3.07	51	234
Nat Habit Curry Sesame FRESH Hair Mask	57*	18	12	6	7*	100	4.12	106	217
Inatur Amla Hair Mask	43	26	19	0	12	100	3.88	80	22
ENN'S RE-flax flaxseed hair styling gel	15	27	17	26	16	100	3.02	29	7
Mean	41	23	15	9*	13*	100	3.91	Total	2,926

Note: 5 star is the highest and 1 star is the lowest customer rating. The total number of ratings reveals the popularity of the product; more customer ratings reflect higher popularity, and vice versa; and CV (%) reflects the variability in consumer ratings; a higher CV indicates an unstable preference by consumers. *Indicates that there is a significant difference in actual frequency compared to expected frequency of 20% at 5% level by using χ^2 tests.

In terms of popularity, Touch Herbal Papaya Cream and Dabur Gulabari Cold Creams are placed last and second to last, respectively. Creams targeted at specific needs (anti-marks, pigmentation) take up the top three positions in terms of popularity, whereas creams with general purposes take up the bottom four.

Forest Essentials Soundarya Cream with 24 Karat Gold has the highest 5-star rating, showing the highest

customer satisfaction and loyalty. This lotion is entirely natural. Biotique Bio Morning Nectar Flawless Skin Cream, which has the second-highest weighted rating, appears to be natural, but it's vital to note that the source of its Cleanser Base Q.S. is not specified on the bottle. Neuhack's Pigmed Cream has the lowest rating, and the cream base is not included in the ingredient list.

Table 5. Customer ratings for cream

Parameters	Rating								
	5 star (%)	4 star (%)	3 star (%)	2 star (%)	1 star (%)	Total (%)	Average rating (1-5)	CV (%)	Total number of ratings
Bajaj Nomarks - Ayurvedic Anti Marks Cream	49*	23	16	6*	7*	100	4.04	87	1,686
Neuhack healthcare Pigmed cream	31*	17	16	12	25	100	3.20	38	1,279
Jovees Ayurveda anti blemish pigmentation cream	39*	26	15	8*	12	100	3.72	63	686
Biotique Bio Morning Nectar Flawless Skin Cream	54*	25	12	3*	5*	100	4.17	106	657
Forest essentials soundarya cream with 24 karat gold	66*	17	8	3*	6*	100	4.34	131	472
Dabur gulabari cold cream	55*	19	9	5	13	100	4.01	100	120
Touch Herbal Papaya cream	20	21	59	0	0	100	3.61	120	6
Mean	45*	21	19	5*	10*	100	3.82	Total	4,906

Note: 5 star is the highest, and 1 star is the lowest customer rating. The total number of ratings reveals the popularity of the product; more customer ratings reflect higher popularity, and vice versa; and CV (%) reflects the variability in consumer ratings; a higher CV indicates an unstable preference by consumers. *Indicates that there is a significant difference in actual frequency of cell compared to expected frequency of 20% at 5% level by using χ^2 tests.

Face pack-type products

Face packs are beauty products designed to improve the appearance and health of your skin. They come in various forms, including masks, creams, gels, and clay-based products, each offering different benefits for different skin types and concerns. Among face pack-type products, the yoghurt skin whitening and brightening mask from Lotus Herbals is more popular, with 77% of total ratings, followed by Himalaya Herbals' Purifying Neem Pack (16%) and Vaadi Kesar Haldi Fairness Pack

(4%); together, these three received 97% of total ratings, indicating very high market concentration (Table 6). The Auravedic ubtan mask, Jovees Ayurveda Anti Blemish Pigmentation Face Mask, and Kama Ayurveda Suvarna Haldi Chandan are all-natural as per ingredient lists, but their popularity and ratings are stagnant. So, there is no strong association between all-natural ratings and popularity in this segment, which again points out the need for increased awareness, proper labelling, and brand promotion to get a premium price.

The Neem Pack from Himalaya Herbals has a high overall rating and is a more popular product. Himalaya Herbals' Pack has the highest average ratings, with 84 of its overall ratings in the 4- and 5-star range. Kama Ayurveda Suvarna Haldi Chandan comes next. It's interesting to note that the chemical-free Kama Ayurveda Suvarna Haldi Chandan received a lower overall rating. The expensive price of the product (INR 44.8 per gram) is most likely to blame for this. From the customer's perspective, if a product is expensive, they will have very high expectations of it. Although quality-wise, ayurvedic ubtan masks are chemical-free and positioned as a premium product (with ₹5 per gram), the average rating and popularity are less compared with the Himalaya Neem Pack (which is priced at ₹1.5 per gram). In India, ubtan is the popular traditional herbal cosmeceutical, and most people make it according to the knowledge passed down through their families; (39) hence, positioning it as

Table 6. Customer ratings for face pack type product

Parameters	Rating								
Product details	5 star (%)	4 star (%)	3 star (%)	2 star (%)	1 star (%)	Total (%)	Weighted rating (1-5)	CV (%)	Total number of ratings
Lotus Herbals yogurt skin whitening & brightening masque	55*	27	11	3*	4*	100	4.26	109	8,927
Himalaya Herbals Purifying Neem pack	59*	25	9	3*	3*	100	4.31	118	1,835
Vaadi kesar haldi fairness pack	38	27	15	7	13	100	3.70	62	453
VLCC Ayurveda Multani Mitti Face Pack	52*	27	13	2*	5*	100	4.16	102	248
Kama Ayurveda Suvarna Haldi Chandan	61*	20	9	4	7	100	4.27	118	83
Jovees Ayurveda Anti Blemish Pigmentation Face Mask	26	31	22	6	16	100	3.48	48	27
Auravedic ubtan mask	21	26	19	18	16	100	3.18	19	25
Mean	45*	26	14	6	9	100	4.24	Total	11,598

Note: 5 star is the highest and 1 star is the lowest customer rating. The total number of ratings reveals the popularity of the product; more customer ratings reflect higher popularity, and vice versa; and CV (%) reflects the variability in consumer ratings; a higher CV indicates an unstable preference by consumers. *Indicates that there is a significant difference in actual cell frequency compared to expected frequency of 20% at 5% level by using χ^2 tests.

Products like Kumadi oil are not commonly used due to their expensive price. One millilitre of Vital Organics's Ayurvedic Kumkumadi oil, for instance, costs INR 13.27 per ml. While Fem Fairness Naturals Crème and BoroPlus

Table 7. Customer ratings for other skin care products

Parameters	Rating								
Product details	5 star (%)	4 star (%)	3 star (%)	2 star (%)	1 star (%)	Total (%)	Average rating (1-5)	CV (%)	Total number of ratings
Biotique bio cucumber tonner	49*	26	13	5*	7*	100	4.05	91	44,004
BoroPlus Doodh Kesar Body Lotion (Ayurvedic)	53*	25	13	4*	5*	100	4.17	101	1,132
Blue nectar ayurvedic sensuous body oil	53*	26	8	5*	8*	100	4.11	101	869
Fem Fairness Naturals Crème Bleach - Turmeric Herbal	50*	27	16	4*	3*	100	4.17	97	204
Khadi natural herbal charcoal face wash	33	31	13	10	13	100	3.61	55	90
Soulflower Kumkumadi Herbal Night Beauty Elixir	46	26	16	6	7	100	4.01	83	88
Vital organics's Ayurvedic Kumkumadi oil	31	10	24	13	23	100	3.16	43	59
Mean	45*	24	15	7*	9*	100	4.05	Total	46,446

Note: 5 star is the highest and 1 star is the lowest customer rating. The total number of ratings reveals the popularity of the product; more customer ratings reflect higher popularity, and vice versa; and CV (%) reflects the variability in consumer ratings; a higher CV indicates an unstable preference by consumers. *Indicates that there is a significant difference in actual frequency of cell compared to expected frequency of 20% at 5% level by using χ^2 tests.

a premium product at a higher price hindered its popularity.

Other skin care products

Among other skin care products, the Biotique Bio Cucumber Toner is more popular, with almost 95% market share, followed by BoroPlus Doodh Kesar body lotion (2%) and Blue Nectar Ayurvedic sensuous body oil (2%); together, these three received 98% of total ratings (Table 7). The average rating of this product category is 4.05, with the highest rating for BoroPlus, Fem Fairness Natural cream and Blue Nectar.

The ratings for many minor products are highly variable indicating there is no customer loyalty in this category except for Biotique and BoroPlus. Although, some products like toner are popular in physical markets, they are not popular online.

Body Lotion have the highest average ratings, in terms of popularity Biotique bio cucumber tonner is way above all products.

4.2.3 Product category-wise analysis

The study aims to understand the consumer preference for ayurvedic skin and hair care products among Indian consumers. The study is based on both primary data collected via email from 260 respondents and secondary data collected from Amazon ratings for different products. This section summarises the category-wise ratings and variations in the ratings. The most popular and frequently used hair product is hair oils, and according to the mean (%), just 14 of their clients are highly dissatisfied with them (rated 1 and 2 star) (Figure 4). The variability in customer ratings is less among oils, as shown by the low coefficient of variation (Figure 5). Shampoo is the second most popular product, and compared to hair oils, these products have fewer 5- and 4-

star ratings. In this case, there is a significant amount of dissatisfaction, and it also has a greater CV than the oil in terms of five-star reviews. Because buyers are happy with some features of the product but not with others, the majority of products, as a fraction of the total, receive close to 3-star ratings. This category's pricey products were given a 3-star rating primarily because they failed to live up to consumers' expectations. Other products have lower 5- and 4-star ratings and greater 1- and 2-star ratings than shampoo and hair oils. It implies that consumers are less happy with products other than hair oils and shampoo. All categories of skin care products have mean ratings that are relatively similar to one another. One of the most well-liked skin care products, face packs, gets somewhat more 5-star reviews than others.

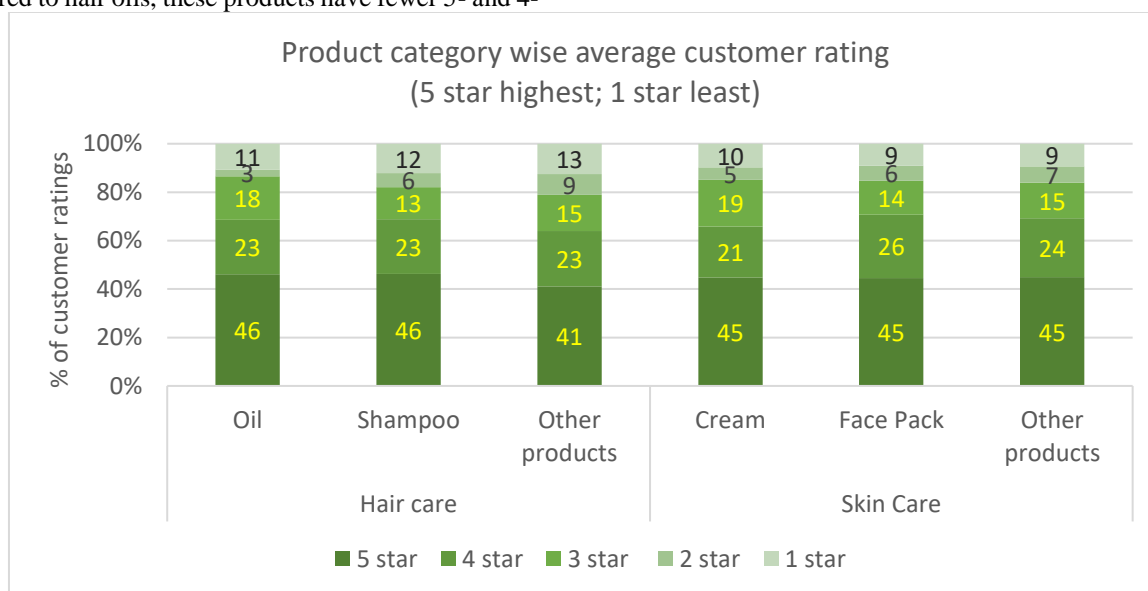


Figure 5. Product category-wise average customer ratings (%) (5 stars is the highest; 1 star the least rating)

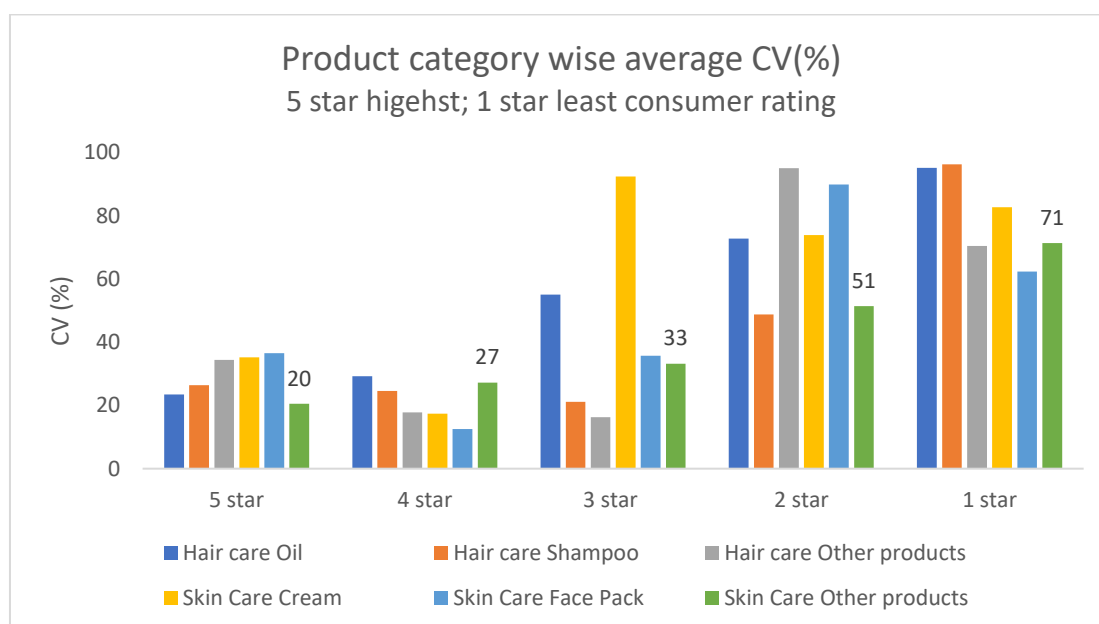


Figure 6. Product category wise average CV (%) (5star is the highest; 1star is the least rating).

5. Discussion

According to the findings of the customer survey, consumers' feedback indicates that using only natural ingredients (40) is not always a sure-fire way to create a

successful product. In addition to these, other important elements that influence purchasing decisions (41) include product quality, visibility, brand recognition, and pricing. Customers prefer (42) compact packets when the product's unit cost is high and is crucial in purchase decision making. It is essential for start-ups to invest in customer education if they wish to introduce 100 genuine, authentic ayurvedic and herbal products. (43) From the findings of the customer survey, it can be inferred that consumers (44) don't fully understand the nature of the ingredients in authentic ayurvedic and herbal products.

The survey results make it abundantly evident that consumers seek a new business that offer genuine ayurvedic (45) skin and hair care products. That is a positive development for start-ups, but at the same time, they must make sure that consumers are aware of the negative aspects of these products, such as the need for frequent use over a long period of time to achieve the best results, their higher price compared to similar goods made with synthetic chemicals, and the results that follow the first use, which are often less than ideal. It is also important to remember that even herbal products can

cause negative effects. (46) Start-ups can also highlight benefits like items with no harmful side effects, all-natural, ecologically friendly, and can produce results that endure , among other things.

Consumers and manufacturers need to be made aware of the harmful long-term effects of synthetic chemicals used in non-natural (47) skin and hair care products. 100 percent natural skin and hair care products might be produced if consumers are willing to pay more than they would for non-natural products and are also flexible with the product's appearance and aroma. The appearance and aroma of 100 percent natural goods are inferior to those made with chemical ingredients. Even natural products contain some synthetic chemicals as emulsifiers to keep ingredients from separating, to make them more aesthetically pleasing, and as fragrances to enhance aroma. If consumers demand products made completely of natural ingredients, manufacturers will stop adding chemicals to products to increase their shelf life or visibility. Modern technology is helping manufacturers use all natural ingredients in their products. (48)

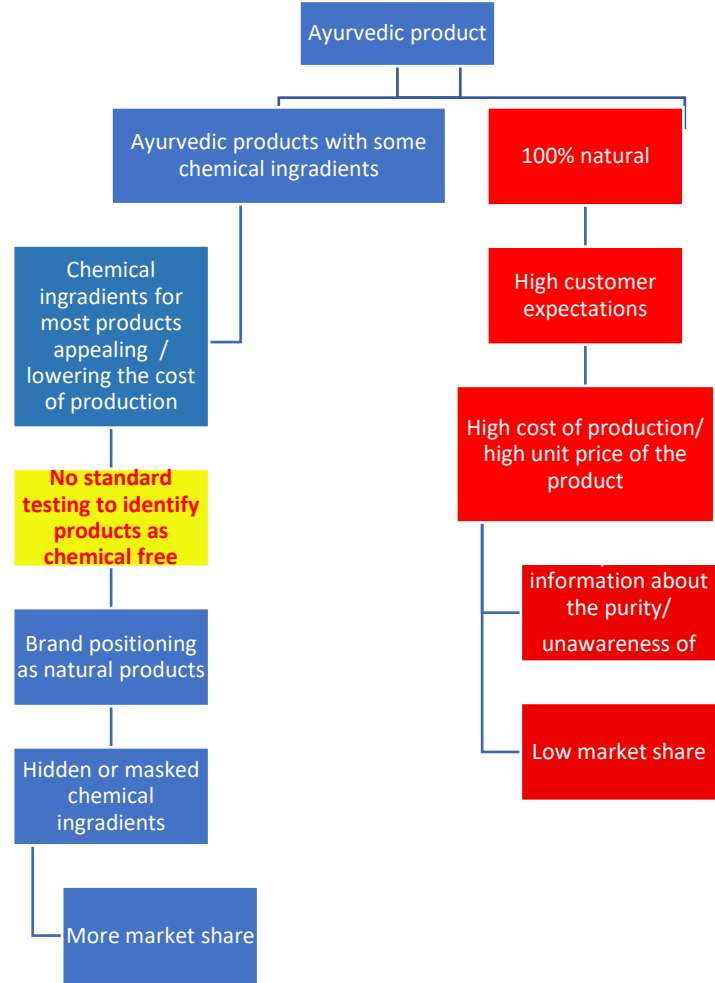


Figure 7. Summary graph of Ayurvedic products consumer and market behaviour

Note: critical policy intervention ‘standard testing’ is highlighted in yellow box to show the importance

Regulatory environment

The information above naturally raised the question: Are Indian ayurvedic hair and skin care products subject to lax (49) regulation? India’s Drugs and Cosmetics Act,

1940, was amended in December 2016 to increase its authority and scope. The Indian Drugs and Cosmetics Act, 1940, defines cosmetics as anything that is meant to be rubbed, sprayed, poured, or sprinkled on the human

body with the goal of altering the appearance, beautifying, attracting, or cleansing.

Section 9C of the Drugs and Cosmetics Act, 1940, provided a detailed definition of a misbranded cosmetic. According to this provision, a cosmetic is misbranded (50) if it has an unapproved colour, is incorrectly labelled, or if the label, container, or any other packaging that comes with the cosmetic contains misleading information. Subdivision "d" of Section 17E of the Drugs and Cosmetics Act of 1940 describes adulterated cosmetics as those that contain a colour that is not one that is prescribed (for colouring purposes only). Section 27A of the Drugs and Cosmetics Act of 1940 states that breaking Section 17E carries a sentence of up to three years in prison and a fine of at least 50,000 rupees, or three times the value of the seized cosmetics, whichever is greater.

The Drugs and Cosmetics Act, 1940's Chapter IV A, addresses the categories of Ayurveda, Siddha, and Unani drugs. In addition to the Drugs and Cosmetics Act, 1940, an AYUSH (Ayurveda, Yoga, Unani, Siddha, and Homoeopathy) licence is required for the manufacture of ayurvedic and herbal products in India. Under the AYUSH manufacturing licence, there are three different sorts of licences: the complete manufacturing licence, the loan licence, and the contract/third party manufacturing licence. A few of the strict requirements for the AYUSH complete manufacturing licence include the minimum size of the manufacturing unit and its mandatory GMP (Good Manufacturing Practice) (51) certification, the presence of two ayurvedic experts and two pharmacists, the requirement of all manufacturing and packaging machines, and the mandatory regular visits of a drug inspector in the unit. The AYUSH loan licence is used when manufacturing and marketing are done by two separate entities. Here, the marketer has to source final products from a GMP-certified manufacturer and also obtain product approval from the concerned authority. Manufacturing and marketing are handled by two different entities in the AYUSH contract/third-party manufacturing licence as well. In this case, the manufacturer takes care of all requirements and formalities with the AYUSH office on his own.

Unfortunately, cosmetics manufacturers continue to violate laws and regulations. (51) As a result, the Indian government has established more comprehensive guidelines for cosmetics under the Indian Cosmetics Rules 2020. Chapter VI of the Indian Cosmetics Rules 2020 deals with labelling, packaging, and standards for the sale or distribution of cosmetics. It is stated in Chapter VI, Section 34(7), that a list of ingredients with a weight greater than 1 must be mentioned in descending order of weight or volume at the time of addition, followed by those with a weight less than or equal to 1 in any order, and preceded by the word "ingredients." An exception to this rule is a packet containing 30 gm of solid or semi-solid material or 60 mL of liquid. Chapter VIII of the Indian Cosmetics Rules 2020 deals with the testing of cosmetics and raw ingredients, whereas Chapter IX covers voluntary recalls and other miscellaneous aspects.

6. Conclusion

The paper aimed to examine consumer perceptions of ayurvedic and herbal skin and hair care products and the market structure of online ayurvedic products production in India. We conducted a primary poll and a supplemental survey in 2022, followed by the analysis of secondary data collected from the Amazon portal, to understand consumer behavior and choices and market structure. The most significant finding is that using only natural components is not always a sure-fire way to create a successful product. In addition to these, other important elements that influence purchasing decisions include product quality, visibility, brand recognition, and pricing. Customers prefer compact packets when the product's unit cost is significantly higher and is a crucial aspect in purchase decision. It is pertinent for start-ups to invest in customer education if they wish to introduce 100 percent genuine, authentic ayurvedic and herbal products (Figure 7). This is primarily because the survey found that consumers don't fully understand the nature of the ingredients in authentic ayurvedic and herbal products. The survey results make it abundantly evident that consumers seek a new business that can produce genuine ayurvedic skin and hair care products. Consumer awareness of the harmful impacts of the product's chemical ingredients is the primary driver of this interest. This is a positive development and a business opportunity for the start-ups. At the same time, it's critical to educate customers on the value of continued usage of ayurvedic and herbal products to achieve desired results. The market for ayurvedic products is highly concentrated with a few top brands, and there is a need for encouraging healthy competition through promoting startups.

Limitations of the study

Our methodology has secondary survey-related limitations. There are some products about which the respondents felt incredibly positive or negative in the primary survey, but we were unable to include those products in the secondary data analysis; the reason is that they were not included in the Amazon database and there is no information on user reviews. These local products from small producers are consequently not sufficiently represented in the study.

Acknowledgements

I would like to express my gratitude to the participants of the field survey

Financial Disclosure statement: The authors received no specific funding for this work.

Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of this article.

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