

Survey on Consumer Preferences of Shampoos And Conditioners

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Abstract- This survey-based study was done to understand consumer preferences for shampoo and conditioner products and to check the physicochemical properties through laboratory testing. Consumer responses were collected using a proper questions set prepared on Google Forms, which focused on brand preference, usage patterns, satisfaction level, and the side effects experienced. 70 responses were collected. Also with the survey, laboratory tests such as pH determination, foaming ability, dirt dispersion, wetting time, percentage solid content, and physical appearance were done on selected popular brands like Dove, L'Oréal Paris, and Head & Shoulders. The results show that factors like pH balance, cleansing efficiency, and formulation consistency have a noticeable action on user satisfaction. This study helps in understanding how scientific properties of hair care products affect consumer acceptance.

Keywords: Conditioner, Dirt Dispersion test, Foaming index , pH testing, , Shampoo, Wetting time test

I. INTRODUCTION

The hair care industry has seen too much growth due to the increasing focus on personal cleaning and hygiene. Shampoos and conditioners have become needful components of daily hair care routines, which plays an important role in having scalp health, hair texture, and overall appearance. Too much variety of products are sold in the market, with renowned brands such as L'Oréal Paris, Dove, and Head & Shoulders ruling consumer preference.

Shampoos are preferably used to remove dirt, excess oil, and environmental pollutants from the scalp and hair, whereas conditioners are used to improve hair texture, reduce dryness, minimize frizz, and reduce mechanical damage. As many products are available in market claiming benefits such as anti-dandruff action, hair fall control, damage repair, and herbal or chemical-free composition, consumers many times have difficulty in choosing products that are best for their hair type and scalp condition.

As all chemical formulations have side effects, hair care products may also have some side effects. The effects that

are mostly reported are small and temporary, like scalp dryness, frizz, or roughness, which are often solved after changing the product. Then also, concerns of long-term hair health and the exposure that we provide to chemical ingredients has increased consumer awareness and caution. So, transparent communication related to product composition and physicochemical properties, such as pH and surfactant behaviour, is required for building consumer trust.

This study aims to examine consumer opinions, usage patterns, viewed effectiveness, and side effects which are associated with shampoo and conditioner products through a structured survey. Additionally, laboratory checking of selected products is done to get a scientific testing of their quality and performance, to get a balanced understanding that we get action on hair and scalp health.

II. OBJECTIVE

The main objective of this survey is to study the experience of consumer and their attitudes toward mostly used shampoo and conditioner products. This study also has aim to check the chemical composition of these products by doing laboratory testing which was done in the lab. The objectives for the study are:

1. To understand the consumers insight for hair care products:
To study the level of trust consumers have in the safety, quality, and the effectiveness that the shampoo and conditioner products have which are available in the market.
2. To examine side effects:
To find the common hair and scalp problems such as hair fall, dandruff, dryness, frizz, and irritation which are experienced by users after they use this products regularly.
3. To test physicochemical properties of products:
To check the laboratory parameters such as pH, foaming ability, dirt dispersion, and wetting behaviour of the shampoo and conditioner samples which got high response after survey.

4. To correlate consumer feedback with experimental results:

In order to determine whether the consumer is satisfied with the actual chemical performance of the products we compared survey responses with laboratory findings.

5. To get a scientific basis for informed product selection: To help users and manufacturers relate the relationship between product composition, performance, and user experience.

III. METHODOLOGY

The present study follows a two way approach methodology which combines a consumer survey with laboratory-based experimental testing to know the performance and safety of shampoo and conditioner products. To compare between user perceptions and scientifically measured properties we used this approach.

A. Data Collection and Survey Design

To collect information related to participants' demographic details, brand preferences, frequency of product usage, and personal experiences with shampoo and conditioner products a perfect question set was designed. The question sets also focused on identifying common hair and scalp issues, interpreted effectiveness, satisfaction levels, and any side effects which are experienced by consumers during product use.

Participants shared their different experiences which they got while using these products. Some of the consumers got the little issues such as scalp dryness or frizz, and some others noticed positive results, especially in controlling hair fall and dandruff. The survey was conducted using Google Forms, and all the responses that we received were counted for analysis. The collected data was examined using simple percentage calculations and was also presented in the form of pie charts to make the results easy to understand and interpret.

B. Survey Question set Design

Structured questions were created by using Google Forms to gather primary information such as how consumers use shampoo and conditioner products, also with their preferences and personal experiences. The questions were made easy to understand and answer to the user by multiple-choice or rating-based. The survey made consists of the questions related to age group, usage habits, used brands, product effectiveness, side effects, and overall satisfaction.

The questions were carefully checked to ensure they were clear, relevant, and easy for participants to respond to before sharing the form.

C. Key Survey Questions

The major questions which are included in the Google Form survey are given below:

1. Select your used shampoo and Conditioner:
 - a) Dove
 - b) L'Oréal Paris
 - c) Tresemme
 - d) Pantene
 - e) Mamaearth
 - f) Wow Skin Science
 - g) BBLUNT
 - h) Matrix Biolage
 - i) Clinic Plus
 - j) Head and Shoulders
 - k) Sunsilk
 - l) Matrix
2. What influenced your product choice the most?
3. What is your primary hair concern?
 - a) Hairfall
 - b) Dandruff
 - c) Dryness
 - d) Frizz
 - e) Colour Protection
 - f) Sensitive Scalp
 - g) Split ends
 - h) Other
4. Did this product meet your expectations for solving your hair concerns? (Yes/No/Partially)
5. Have you experienced any side effects or issues after using this product? (Yes [Please specify], No)
6. What influenced your product choice the most?

D. Selection of Samples for Experimental Testing

Based on the survey results, popular brands such as Dove, L'Oréal Paris, and Head & Shoulders were selected for lab testing. To check their physicochemical properties and how well they perform in actual use, Shampoo and conditioner samples from these brands were examined.

E. Experimental Evaluation of Shampoo and Conditioner

To examine the quality and performance of selected products using standard evaluation parameters, Laboratory experiments were carried out. The following tests were conducted:

1. Physical Appearance

For colour, clarity, consistency, and homogeneity samples were visually examined. Any phase separation, turbidity, or unusual odour was noted.

2. pH Determination

By using pH paper or a digital pH meter at room temperature, the pH of shampoo and conditioner samples was measured. The product compatibility with hair and scalp is shown by pH value.

3. Foaming Index (Foaming Ability)

By shaking a known concentration of shampoo solution in a graduated cylinder and measuring the height and stability of the foam produced the foaming index was determined.

4. Dirt Dispersion Test

By adding a few drops of shampoo to water containing ink a dirt dispersion test was performed. To evaluate cleansing efficiency the distribution of ink between foam and water was observed.

5. Percentage Solid Content

By evaporating a known quantity of shampoo sample and calculating the residue left the percentage of solid content was determined. This test helps us to assess product concentration and consistency.

6. Wetting Time Test

By placing a canvas disc on the surface of shampoo solution and recording the time required for it to sink, the wetting time was measured. Better detergent action is detected by shorter wetting time.

F. Data Correlation and Interpretation

To analyse the relationship between consumer satisfaction and laboratory-measured performance the experimental findings were compared with survey responses. A comprehensive evaluation of shampoo and conditioner products by integrating user experience with scientific assessment is provided by this correlation.

IV. RESULTS AND DISCUSSION

The results that we got from the survey and laboratory experiments are presented and discussed in this section. The findings are divided into two parts: survey-based consumer analysis and experimental checking of shampoo and conditioner products.

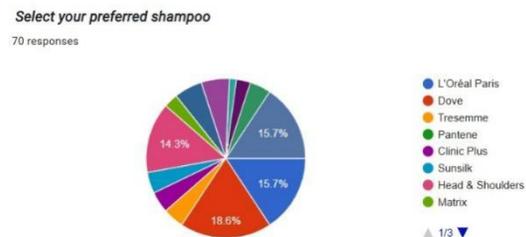
A. Survey-Based Analysis

The Google Form survey got valid responses from participants from different age groups. The collected data was checked using percentage distribution and represented graphically using tables.

The responses collected through the Google Form survey were checked and are presented using pie charts and tabular representation for nice understanding. A total of 70 respondents participated in the survey, providing insights into shampoo and conditioner preferences, influencing factors, hair concerns, product effectiveness, and side effects.

4.A.1 Used Shampoo Brand

Distribution of Used Shampoo Brands



Discussion:

The table shows that Dove (18.6%) is the most used shampoo brand among respondents, followed by L'Oréal Paris and Others (15.7% each). Head & Shoulders (14.3%) also shows notable usage, mainly among users with dandruff-related concerns. The remaining brands occupy smaller shares, showing varied but limited preference. This shows that consumers tend to use structured advertised and dermatologist-recommended brands.

4.A.2 Factors Influencing Shampoo Selection

Factors Influencing Product Choice

Influencing Factor	Observations
Cost & cleaning efficiency	Most common
Natural ingredients claim	Significant
Advertisement	Common
Reviews	Moderate
Hair fall control	Frequently mentioned
Fragrance	Important for some
Family suggestion (Mother)	Notable

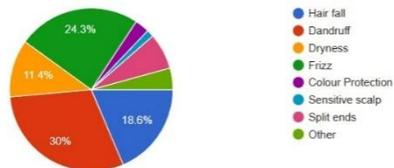
Discussion:

The responses reveal that cost-effectiveness and hair-cleaning ability are the most influential factors in shampoo selection. Claims related to natural ingredients, advertisements, and online/offline reviews also play an important role. Interestingly, family influence, especially recommendations from mothers, remains important, showing traditional buying behaviour.

4.A.3 Primary Hair Concerns (Shampoo Users)

Primary Hair Concerns

What is your primary hair concern?
70 responses



Discussion:

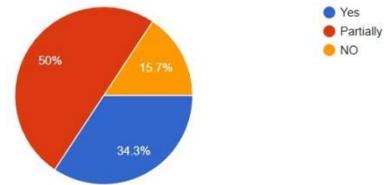
The table shows that dandruff (30%) is the most common hair concern, followed by frizz (24.3%). Frizz and dryness are secondary concerns. This explains the renownedness of anti-dandruff shampoos such as Head & Shoulders and Dove.

4.A.4 Product Effectiveness in Solving Hair Concerns (Shampoo)

Product Effectiveness Response

Did this product meet your expectations for solving your hair concerns?
70 responses

70 responses



More than half of the respondents (50%) reported that shampoos partially met their expectations, while 34.3% were fully satisfied. A small portion (15.7%) found the products not effective. This shows that commercial shampoos provide moderate results but may not completely remove hair concerns.

4.A.5 Side Effects Observed After Shampoo Use

Table : Side Effects Reported

Response	Observation
No side effects	Majority
Dryness after conditioner	Few cases

Discussion:

Most respondents reported no side effects after using shampoos. However, a few users experienced dryness after conditioner use, indicating possible mismatch with hair type or composition sensitivity. Overall, shampoos were found to be safe for regular use.

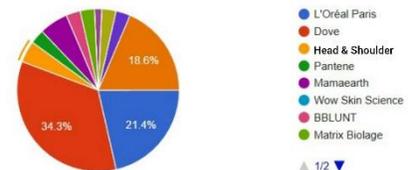
Section 2: Conditioner Selection

4.A.6 Used Conditioner Brand

Distribution of Used Conditioner Brands

Section 2: Conditioner Selection
70 responses

70 responses



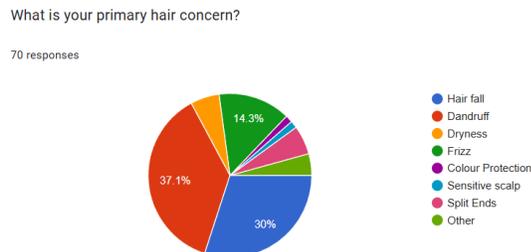
Discussion:

The conditioner preference data shows Dove (34.3%) as the most used brand, followed by L'Oréal Paris (21.4%) and Head and Shoulders (18.6%). This shows consumer trust

in moisturizing and damage-repair conditioners from established brands.

4.A.7 Primary Hair Concerns (Conditioner Users)

Hair Concerns Addressed by Conditioners



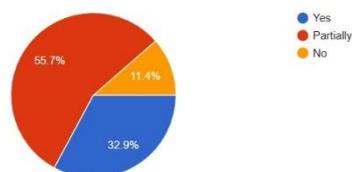
Discussion:

Conditioners are mainly used to manage dandruff, frizz, and hair fall, with frizz being more famous in conditioner usage compared to shampoo. This shows the role of conditioners in smoothness and moisture retention.

4.A.8 Effectiveness of Conditioners in Meeting Expectations

Conditioner Performance Feedback

Did this product meet your expectations for solving your hair concerns? (Yes/No/Partially)
70 responses



Discussion:

More than half of the respondents (55.7%) said that the conditioners only partially met their expectations, while 32.9% were completely satisfied with their performance. This indicates that conditioners do help in improving hair quality, but they may not offer a complete or long-term solution for all users.

Overall Discussion Summary

The survey shows that consumers prefer well-known, affordable and cheap brands and take their decisions on cost, performance, and hair concern-specific benefits. While most products are considered safe and moderately effective,

complete satisfaction is limited, showing the need for personalized hair care products.

B. EXPERIMENTAL EVALUATION

In addition to the consumer insight survey, a detailed laboratory testing was carried out on selected shampoo and conditioner brands, namely Dove, L'Oréal Paris, and Head & Shoulders (H&S). The laboratory tests were performed to determine physical characteristics, cleansing efficiency, surfactant behaviour, and formulation quality, thereby providing a scientific explanation for the preferences observed in the survey.

4.B.1 Physical Appearance Test

The organoleptic properties such as colour, texture, and uniformity are checked by the physical appearance test, which influence consumer trust and first impression.

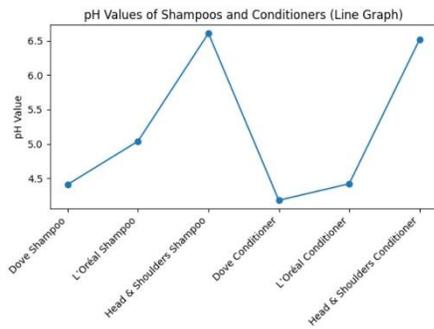
Table : Physical Appearance of Tested Samples

Brand	Colour	Appearance	Texture
Dove	Opaque white	Uniform	Creamy, smooth
L'Oréal Paris	Pearlescent white	Uniform	Silk-like
Head & Shoulders	Pale blue/white	Uniform	Thick, viscous

Discussion:

All tested samples show uniform appearance without phase separation or outside particles, showing good formulation stability. Dove and L'Oréal showed smoother textures, showing that they are more cosmetically interesting, and Head & Shoulders appeared thicker, same as it is described in medication, anti-dandruff positioning.

4.B.2 pH Analysis of Shampoo and Conditioner Samples pH Values of Shampoo and Conditioner Samples



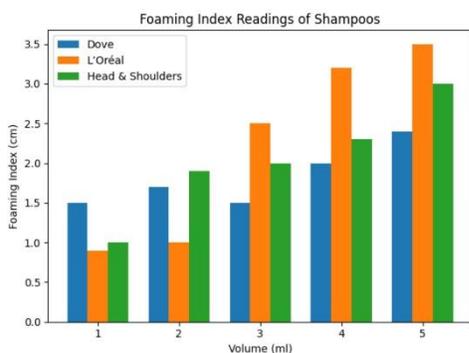
The results show that Dove and L'Oréal shampoos and conditioners have slightly acidic pH values, which is within the recommended range for hair and scalp health. Acidic formulations helps in cuticle closure, moisture retention, and reduced hair damage.

Both Head & Shoulders shampoo (6.61) and conditioner (6.52) showed slightly alkaline pH values, may result to dryness or roughness with frequent use but are useful for dandruff control . This observation correlates with survey responses which shows some part of satisfaction among some users.

4.B.3 Foaming Index Test

By using the cylinder shake method by changing shampoo concentration from 1 ml to 5 ml, foaming behaviour was studied

Foaming Index Readings



Head & Shoulders achieved 1 cm foam height at 1 ml, indicating a foaming index of 1000, showing strong surfactant activity. L'Oréal reached 1 cm at 2 ml (foaming index ≈ 500), while Dove produced foam even at low concentration, showing slight and effective lathering. Controlled surfactant composition was seen as excessive foaming was not observed.

4.B.4 Dirt Dispersion Test

We come to know about whether dirt remains suspended in water or gets trapped in foam by this test.

Table : Dirt Dispersion Test Results

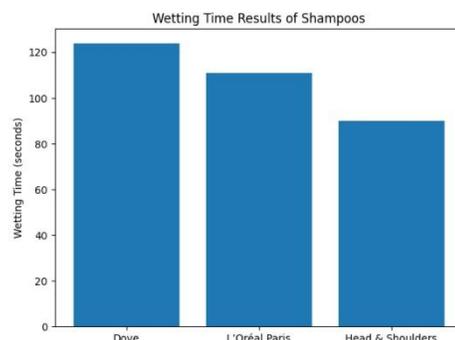
Brand	Observation	Performance
L'Oréal Paris	No ink in foam	Excellent
Dove	Trace ink in foam	Good
Head & Shoulders	Light ink in foam	Moderate

L'Oréal shows excellent dirt dispersion, preventing re-deposition on hair. Dove also performed well, whereas Head & Shoulders showed slight ink retention in foam, which contributes to dryness after rinsing. L'Oréal was many times described as “cleans hair nicely is the result which supports survey responses.

4.B.5 Wetting Time Test

The ability of surfactants to reduce surface tension, allowing rapid water penetration is measured by the wetting time test.

Wetting Time Results



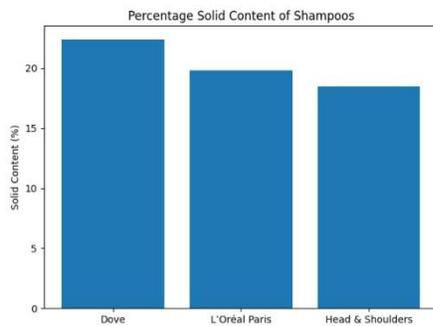
Head & Shoulders showed the fastest and least wetting time, which indicates strong surfactant action suitable for dandruff removal. Dove showed longer and maximum wetting time, showing a conditioning-focused composition, while L'Oréal showed balanced performance.

4.B.6 Percentage Solid Content Test

The concentration of active ingredients in the formulation is shown by the percentage solid content.

$$\text{SolidContent (\%)} = \frac{\text{Weight of dry residue}}{\text{Weight of sample}} \times 100$$

Percentage Solid Content



Dove showed the highest solid content, which determines a richer formulation with conditioning agents. An optimal balance between cleansing and rinse ability is shown by L'Oréal Paris. The lower solid content was shown by Head & Shoulders, it is constant with its focus on cleansing rather than conditioning.

Correlation Between Experimental Results and Survey Findings

The experimental testing that we performed are supported by the consumer survey outcomes:

- Head & Shoulders, with high foaming, fast wetting, and alkaline pH (6.61), is effective for dandruff control but may cause dryness, is not effective for some users.
- Dove, with acidic pH (4.41), high solid content, and mild foaming, is better for conditioning and smoothness, it aligns with its high preference as a conditioner.
- L'Oréal Paris, with balanced pH (5.04), excellent dirt dispersion, and controlled foaming, is good for optimal overall performance, and supports its insight as a trend-driven, effective shampoo.

Overall Experimental Conclusion

The physicochemical properties such as pH, foaming behaviour, wetting ability, and solid content shown by the experimental results directly affect consumer satisfaction. The products which are developed for the therapeutic purposes mainly focus on strong cleansing action, and cosmetic formulations give more importance to conditioning and scalp suitability.

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