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Influence of Dietary Habits on Hair Health Among Young Female Adults (18–25 Years): A Cross-Sectional Study

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ABSTRACT:

Background

Hair health is a key indicator of nutritional and physiological well-being. The increasing prevalence of hair loss among young women has been associated with unhealthy dietary habits, lifestyle modifications, stress, hormonal disturbances, and nutritional deficiencies. Hair follicles require a continuous supply of proteins, vitamins, minerals, and essential fatty acids to maintain normal growth. Inadequate intake of these nutrients may disrupt the hair growth cycle and contribute to excessive hair shedding and reduced hair quality.

Objective

To assess the influence of dietary habits on hair health among young female adults aged 18–25 years residing in Hyderabad.

Methodology

A descriptive cross-sectional study was conducted among 100 female participants aged 18–25 years using a non-probability convenience sampling technique. Data were collected through a structured questionnaire consisting of demographic details, anthropometric measurements, general hair assessment, dietary habits, food frequency patterns, and lifestyle-related variables. Responses were obtained through both online and offline surveys and analysed using descriptive statistics.

Results

Among the 100 participants, 94% reported experiencing hair loss. Although most participants had a normal BMI, unhealthy dietary behaviours remained common. Approximately 63% reported generally healthy eating with occasional unhealthy food consumption, 37% frequently consumed processed or fast foods, 84% preferred home-cooked meals, and 58% skipped at least one meal daily. Stress, inadequate sleep, and low physical activity were also frequently reported and appeared to coexist with poor hair health.

Conclusion

The findings indicate that dietary habits and lifestyle factors play a significant role in maintaining hair health among young female adults. Promoting balanced nutrition, regular meal patterns, healthy sleep habits, stress management, and regular physical activity may contribute to improved hair health and reduced hair loss.

1. INTRODUCTION

Hair is not only an important aesthetic feature but also an indicator of overall nutritional and physiological health. Healthy hair growth depends on an adequate supply of proteins, vitamins, minerals, essential fatty acids, and trace elements required for normal follicular metabolism. Deficiencies in these nutrients may impair the hair growth cycle, resulting in increased hair shedding, reduced hair density, brittleness, and poor scalp health.

Hair loss has become increasingly common among young women due to changing dietary habits, academic and occupational stress, irregular meal patterns, sedentary lifestyles, and environmental influences. Modern diets characterised by frequent consumption of processed foods, refined carbohydrates, and sugar-rich foods may fail to provide adequate quantities of essential nutrients such as iron, zinc, biotin, vitamin D, vitamin B12, folate, and high-quality protein, all of which are necessary for healthy hair growth.

In addition to nutritional factors, psychological stress, inadequate sleep, reduced physical activity, hormonal disturbances, and inappropriate lifestyle behaviours have been associated with increased hair loss. These factors may alter the normal hair growth cycle by increasing the proportion of follicles entering the telogen phase, leading to diffuse hair shedding.

The present study was undertaken to evaluate the influence of dietary habits on hair health among female adults aged 18–25 years in Hyderabad. By examining dietary practices together with lifestyle and anthropometric characteristics, the study seeks to identify modifiable behavioural factors associated with hair health and provide evidence for nutrition-based preventive strategies.

2. LITERATURE REVIEW

Previous studies have consistently shown that nutritional status is closely associated with hair growth and hair loss. The literature reviewed in this thesis indicates that deficiencies in proteins, iron, zinc, vitamin D, biotin, essential fatty acids, and other micronutrients may impair normal follicular activity and contribute to diffuse hair loss.

Marta Jeruszka-Bielak et al. (2014) investigated the relationship between nutritional habits and hair calcium levels in healthy young women. Although hair calcium levels were only weakly associated with overall diet quality, the study demonstrated interactions between vitamin D, magnesium, and calcium intake that may influence hair mineral composition.

González-Reimers et al. (2014) evaluated hair copper concentrations among hospital workers and university students and reported that higher hair copper levels were inversely associated with overweight and obesity. Meat consumption and age independently influenced hair copper content, suggesting that dietary habits contribute to hair mineral status.

Caroline Le Floc'h et al. (2015) demonstrated that supplementation with omega-3, omega-6 fatty acids, and antioxidants over six months significantly improved hair density and reduced the proportion of telogen hairs among women experiencing hair loss.

Trüeb et al. (2016) found that a substantial proportion of women presenting with hair loss had biotin deficiency or suboptimal serum biotin concentrations. The authors emphasized that biotin supplementation should be guided by confirmed deficiency rather than routine use.

Richard L. Lin et al. (2016) highlighted that nutritional deficiencies, endocrine disorders, and systemic illnesses are important underlying causes of hair loss. The review emphasized comprehensive nutritional and hormonal assessment in patients presenting with alopecia.

Collectively, the literature reviewed supports the hypothesis that balanced nutrition, adequate micronutrient intake, and healthy lifestyle practices contribute to maintaining normal hair growth and reducing the risk of hair loss.

3. AIM

To evaluate the influence of dietary habits on hair health among young female adults aged 18–25 years residing in Hyderabad.

4. OBJECTIVES PRIMARY OBJECTIVE

- To assess the influence of dietary habits on hair health among young female adults.

Secondary Objectives

- To evaluate dietary patterns and food frequency among participants.
- To determine the prevalence of unhealthy dietary practices associated with hair loss.
- To assess meal frequency, fast-food intake, and consumption of home-cooked meals.
- To evaluate the influence of stress, sleep, and physical activity on hair health.

5. MATERIALS AND METHODS STUDY DESIGN

A descriptive cross-sectional study was conducted to evaluate the influence of dietary habits on hair health among young female adults aged 18–25 years.

Study Area

The study was carried out in Hyderabad, Telangana, India.

Study Population

Female adults aged between 18 and 25 years from different educational and occupational backgrounds participated in the study.

Sample Size

A total of **100 participants** were included.

Sampling Technique

Participants were recruited using a **non-probability convenience sampling** method.

Data Collection

Data were collected using a self-designed questionnaire containing **36 questions** together with a Food Frequency Questionnaire (FFQ). The questionnaire consisted of five sections:

- General information
- Anthropometric measurements
- Hair assessment
- Dietary habits
- Hair care products and lifestyle assessment

The survey was conducted using both online (Google Forms shared through WhatsApp, Instagram, and Gmail) and offline printed questionnaires distributed in colleges, malls, coffee shops, and community centres.

Statistical Analysis

All responses were entered into Microsoft Excel. The data were analysed using descriptive statistics and presented as frequencies, percentages, tables, graphs, and pie charts.

Ethical Considerations

Participation was voluntary. Participants completed the questionnaire after receiving information about the purpose of the study, and confidentiality of responses was maintained throughout the research process. This reflects the procedure described in your thesis.

6. RESULTS

Participant Characteristics

A total of **100 female participants** aged **18–25 years** completed the study questionnaire. Anthropometric measurements, dietary habits, lifestyle factors, and hair health characteristics were analysed using descriptive statistics.

Table 1. Anthropometric Characteristics of Participants (N = 100) Variable Observation

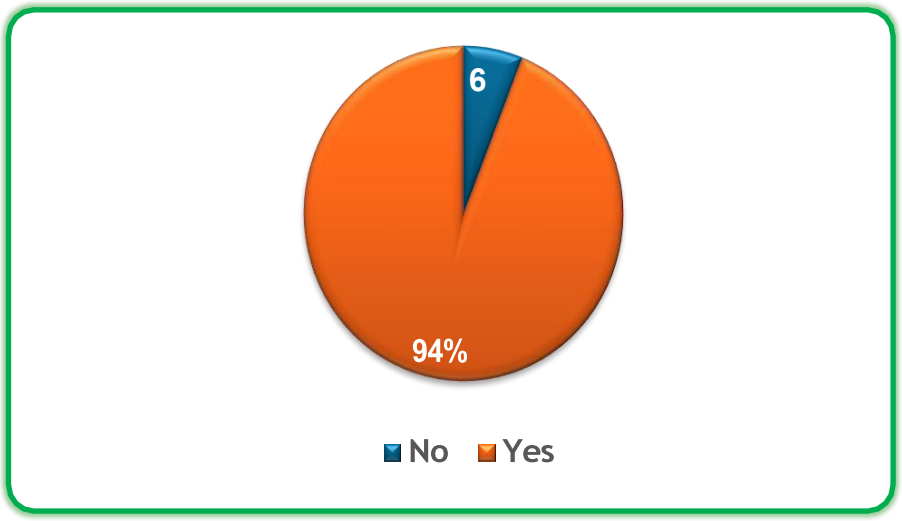
Variable	Observation
Sample size	**100**
Age group	18–25 years
Sex	Female
Parameters assessed	Height, Weight, BMI

Hair Health Status

The survey showed that **G4% of participants reported experiencing hair loss**, indicating that hair fall was highly prevalent within the study population. Only a small proportion reported no hair loss.

Figure 1. Prevalence of Hair Loss

Interpretation



The high prevalence of self-reported hair loss suggests that hair-related concerns are common among young female adults and may be associated with dietary and lifestyle factors evaluated in this study.

Dietary Habits

Most participants (**63%**) described their eating habits as **mostly healthy with occasional unhealthy food consumption**, while **37%** frequently consumed processed or fast foods.

Table 2. Eating Habit Pattern

Eating Pattern	**Percentage**
Mostly healthy with occasional unhealthy foods	63% Frequent
unhealthy/processed food intake	37%

Interpretation

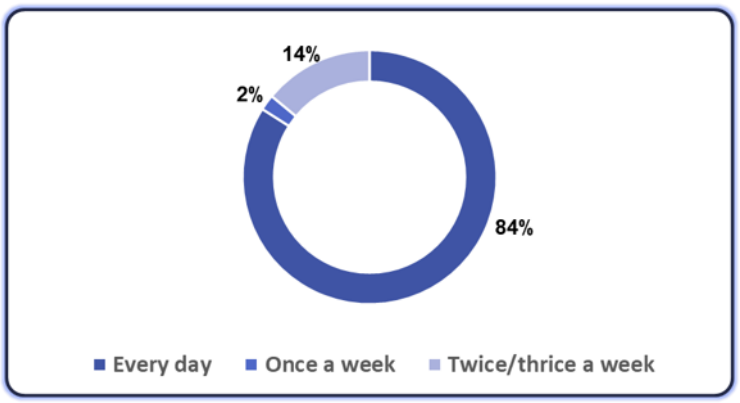
Although most respondents considered their diet generally healthy, regular

consumption of processed foods remained common, suggesting that dietary quality could still influence hair health.

Home-Cooked Meals

A large majority (**84%**) reported consuming **home-cooked meals daily**, whereas the remaining participants relied more frequently on outside food.

Figure 2. Preference for Home-Cooked Meals



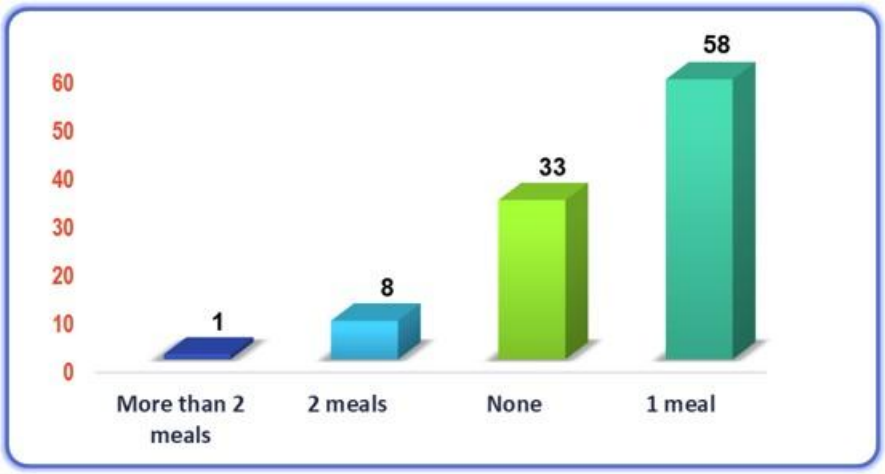
Interpretation

Preference for home-cooked meals indicates awareness of healthier eating practices; however, this did not completely eliminate unhealthy dietary behaviours.

Meal Skipping

More than half of the participants (**58%**) reported **skipping at least one meal every day**. Meal skipping was identified as one of the most common unhealthy dietary practices among respondents.

Figure 3. Frequency of Meal Skipping



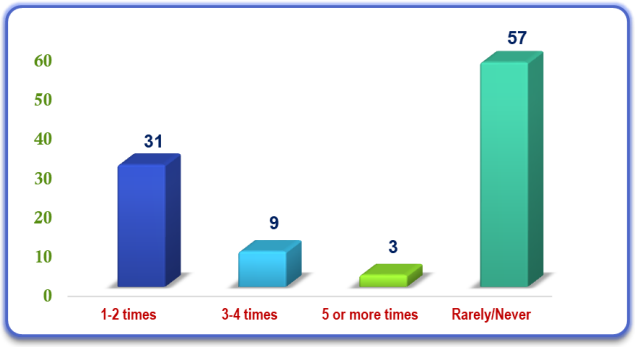
Interpretation

Regular meal skipping may reduce overall intake of essential nutrients required for healthy hair follicle function and continuous hair growth.

Physical Activity

The study found that **57% of participants rarely or never engaged in regular physical activity**, while fewer participants reported exercising routinely.

Figure 4. Physical Activity Pattern



Interpretation

The predominance of sedentary behaviour suggests that inadequate physical activity may be another lifestyle factor associated with poor hair health.

Sleep Pattern

More than half of the respondents (**56%**) believed that **insufficient sleep negatively affected their hair health**. Sleep duration and quality were frequently identified as important lifestyle factors influencing hair condition.

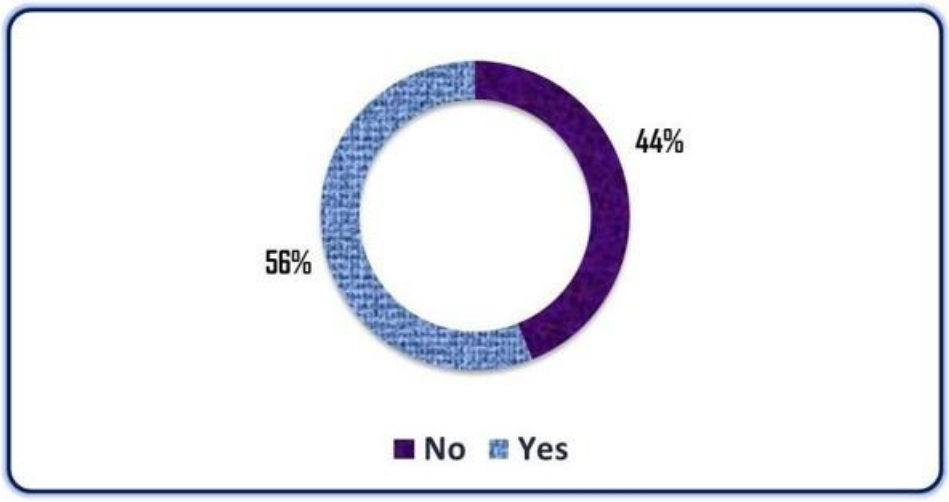


Figure 5. Perceived Effect of Sleep on Hair Health Interpretation

Participants recognised the potential role of adequate sleep in maintaining healthy hair growth and reducing excessive hair shedding.

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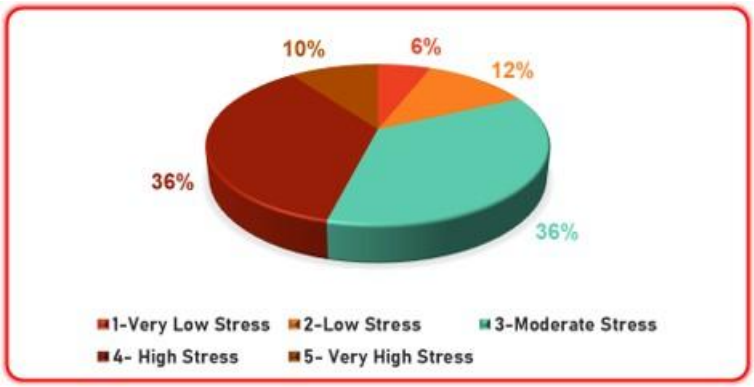
Stress

A substantial proportion of participants reported experiencing **moderate to high stress levels**, and many perceived stress as an important contributor to hair loss.

Figure 6. Stress Level Among Participants



Interpretation

The findings suggest that psychological stress may coexist with dietary and lifestyle factors affecting hair health.

Summary of Key Findings

The principal findings of the study are summarised below:

Variable	Finding
Hair loss prevalence	94%
Mostly healthy diet with occasional unhealthy foods	63%
Frequent processed/fast-food intake	37%
Daily home-cooked meals	84%
Participants skipping meals	58%
Rarely or never exercised	57%
Believed inadequate sleep affected hair	56%

These findings indicate that unhealthy dietary behaviours and lifestyle-related factors were common among participants despite a generally favourable BMI profile, supporting the study objective of evaluating the influence of dietary habits on hair health.

6. RESULTS

6.1 Demographic Profile of Participants

The study included **100 female participants** between **18 and 25 years of age** residing in Hyderabad. Participants represented diverse educational and occupational backgrounds, including undergraduate students, postgraduate students, employed women, homemakers, and healthcare professionals. The use of both online and offline questionnaires enabled the inclusion of respondents from different socioeconomic backgrounds, thereby increasing the diversity of the study population.

Table 1. Demographic Characteristics

Variable	Category
Sample size	100
Gender	Female
Age	18–25 years
Study area	Hyderabad

6.2 Anthropometric Characteristics

Height, weight, and Body Mass Index (BMI) were recorded to evaluate the nutritional status of participants. Most respondents were classified within the **normal BMI range**, while smaller proportions were underweight, overweight, or obese according to standard BMI classification.

Table 2. Anthropometric Measurements

Parameter	Observation
Height	Recorded
Weight	Recorded
BMI	Calculated

Interpretation

The predominance of participants with normal BMI suggests that body weight alone may not adequately explain the occurrence of hair loss. Dietary quality, nutrient intake, and lifestyle behaviours are likely to have an independent influence on hair health.

6.3 Hair Characteristics

General hair assessment revealed that **G4% of participants reported experiencing hair loss**, making it the most common hair-related complaint in the study population. Participants also reported concerns such as hair thinning, dryness, reduced hair volume, split ends, dandruff, and scalp sensitivity.

Table 3. Hair-Related Concerns Reported

Hair Concern	Observation
Hair loss	Most common complaint Hair thinning
Dry hair	Reported
Split ends	Reported
Dandruff	Reported Scalp sensitivity Reported
Split ends	Reported

Interpretation

These findings indicate that multiple hair-related concerns coexist among young female

adults, highlighting the multifactorial nature of hair health.

6.4 Eating Habits

Participants were asked to evaluate their overall dietary habits.

Table 4. Overall Eating Habits

Response	Percentage
Mostly healthy with occasional unhealthy food	**63%**
Frequent unhealthy eating	**37%**

Interpretation

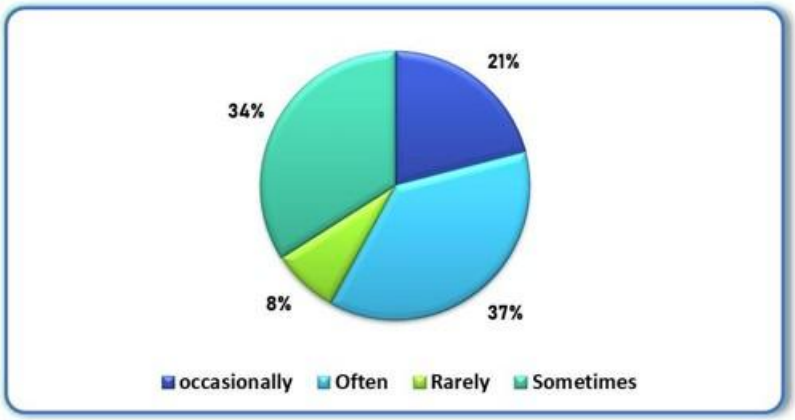
Although the majority perceived their dietary habits as generally healthy, regular intake

of unhealthy foods remained common, suggesting that self-perception may not always reflect optimal nutritional intake.

6.5 Fast Food and Processed Food Consumption

Consumption of processed and fast foods was common among participants.

Figure 2. Frequency of Fast Food Consumption



Interpretation

Frequent consumption of processed foods may contribute to reduced intake of nutrient-dense foods required for healthy hair growth.

Home-Cooked Meals

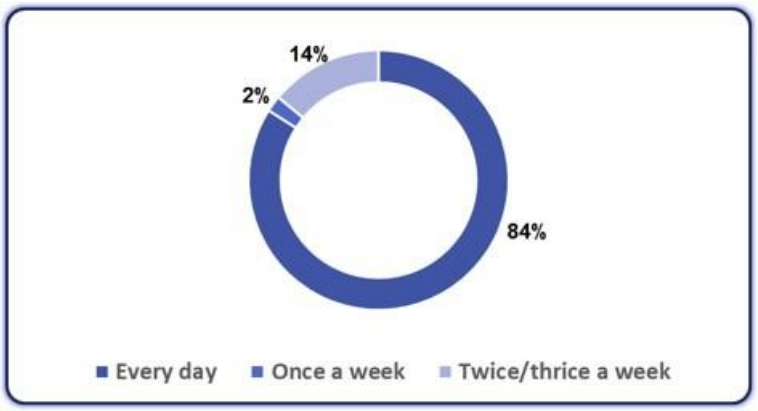
Most respondents (**84%**) preferred consuming home-cooked meals on a daily basis.

Table 5. Preference for Home-Cooked Meals

Response	Percentage
Daily home-cooked meals	**84%**
Less frequent home-cooked meals	**16%**

Interpretation

Despite a high preference for home-cooked meals, unhealthy dietary practices were still observed, indicating that food quality and meal composition remain important considerations.



6.6 Meal Frequency and Meal Skipping

Meal frequency was evaluated as part of dietary assessment.

Table 6. Meal Skipping

Behaviour	Percentage
Skipped at least one meal daily	**58%**
Did not skip meals regularly	**42%**

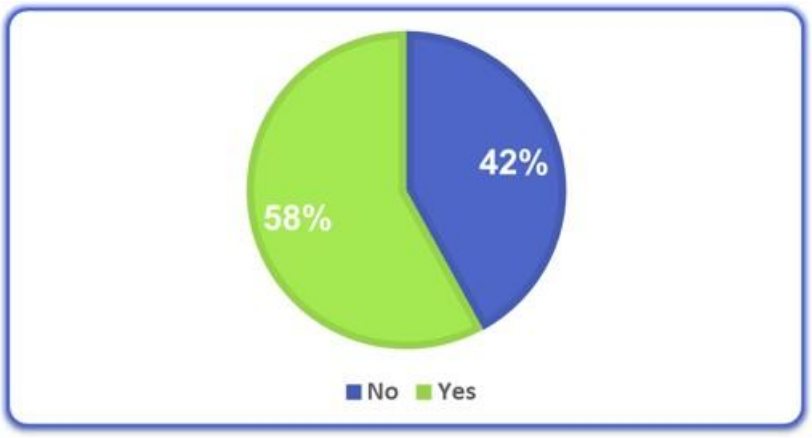
Interpretation

Meal skipping emerged as one of the most prevalent unhealthy dietary behaviours. Regular omission of meals may reduce overall intake of proteins, vitamins, and minerals essential for normal hair follicle metabolism.

6.7 Preference for Sugary Foods

A considerable proportion of participants reported frequent cravings for sugary or carbohydrate-rich foods.

Figure 3. Preference for Sugary Foods



Interpretation

High consumption of refined carbohydrates may adversely affect overall nutritional quality and may indirectly influence hair health.

6.G Sleep Pattern

Most participants reported sleeping between **6 and 8 hours**, while **56%** believed that inadequate sleep negatively affected their

hair health.

Table 7. Sleep and Hair Health

Variable	Finding
Sleep duration	**Mostly 6–8 hours**
Believed inadequate sleep affected hair	**56%**

Interpretation

Sleep plays an important role in cellular repair and hormonal regulation. Participants' perceptions indicate that sleep quality may be an important factor influencing hair health.

6.10 Stress Levels

Many participants reported moderate to high levels of psychological stress.

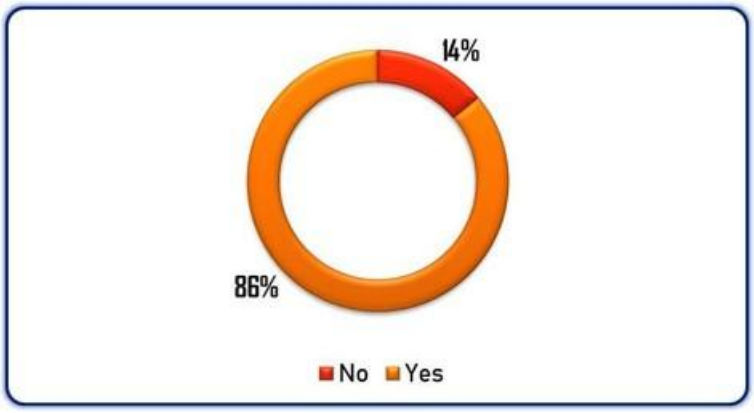


Figure 4. Self-Reported Stress Levels

Interpretation

Psychological stress may contribute to disruption of the normal hair growth cycle and was frequently perceived by participants as a factor associated with hair loss.

6.11 Physical Activity

The study found that **57%** of participants rarely or never exercised.

Table 8. Physical Activity Pattern

Activity	Percentage
Rarely or never exercised	**57%**
Exercised regularly	**43%**

Interpretation

The predominance of sedentary behaviour suggests that reduced physical activity may

indirectly affect hair health through its influence on general well-being and stress.

6.12 Food Frequency Assessment

A Food Frequency Questionnaire (FFQ) was used to evaluate the habitual intake of major food groups among the participants. The assessment included cereals and millets, pulses and legumes, milk and dairy products, fruits, vegetables, green leafy vegetables, nuts and seeds, meat, eggs, fish, beverages, sweets, and processed foods.

Table G. Food Frequency Assessment

Food Group	Frequency Evaluated
Cereals and millets	**Daily/Weekly/Occasionally**
Pulses and legumes	**Daily/Weekly/Occasionally**
Milk and dairy products	**Daily/Weekly/Occasionally**
Green leafy vegetables	**Daily/Weekly/Occasionally**
Fruits	**Daily/Weekly/Occasionally**
Other vegetables	**Daily/Weekly/Occasionally**
Nuts and seeds	**Daily/Weekly/Occasionally**
Eggs	**Daily/Weekly/Occasionally**
Meat and poultry	**Daily/Weekly/Occasionally**
Fish	**Daily/Weekly/Occasionally**
Sugary foods and beverages	**Daily/Weekly/Occasionally**

Interpretation

The food frequency assessment demonstrated considerable variation in the intake of

nutrient-rich foods. While staple foods were consumed regularly by most participants, the intake of fruits, green leafy vegetables, nuts, seeds, and protein-rich foods varied substantially among individuals. Since these foods provide essential nutrients involved in hair follicle metabolism, inconsistent consumption may contribute to poor hair health.

Protein-Rich Food Consumption

Protein intake was assessed through the frequency of consumption of pulses, dairy products, eggs, meat, and fish. Protein is a structural component of hair and is essential for keratin synthesis.

Table 10. Protein-Rich Foods Included in the FFQ Food

Category	Nutritional Importance
Pulses and legumes	Plant protein
Milk and dairy products	Protein and calcium
Eggs	High-quality protein
Meat and poultry	Protein, iron, zinc
Fish	Protein and omega-3 fatty acids

Interpretation

Variations in the intake of protein-rich foods indicate that some participants may not consistently consume adequate dietary protein, which is essential for healthy hair growth and maintenance.

6.13 Fruit and Vegetable Consumption

The Food Frequency Questionnaire also evaluated the intake of fruits and vegetables, which provide vitamins, minerals, antioxidants, and dietary fibre.

Figure 7. Frequency of Fruit and Vegetable Consumption

Food Groups	Daily	Once a week	Twice or Thrice a week	Rarely	Never
IRON-spinach	5%	42%	9%	38%	6%
Lentils	8%	3%	33%	23%	5%
ZINC- Beef	16%	14%	40%	18%	12%
Oysters	2%	9%	5%	31%	53%
Chickpeas	5%	24%	8%	49%	14%
SELINIUM-Brazil Nuts	4%	10%	7%	44%	35%
Seafood	3%	22%	4%	57%	14%
NIACIN- Tuna	1%	8%	6%	47%	38%
Chicken breast	4%	38%	32%	20%	6%
Peanuts	5%	27%	18%	38%	12%
VITAMIN-D:-Fatty fish	3%	17%	12%	53%	15%
Milk	23%	20%	23%	26%	8%
VITAMIN-A:-Carrots	7%	27%	21%	38%	7%
Sweet potatoes	6%	17%	9%	45%	23%
VITAMIN-E:-Almonds	13%	19%	28%	31%	9%
Sunflower seeds	6%	16%	8%	44%	26%
Avocado	5%	8%	8%	44%	38%
FOLIC ACID-Broccoli	4%	17%	5%	38%	36%
Asparagus	2%	8%	4%	45%	41%
BIOTIN-Almonds	10%	24%	19%	27%	20%
PROTEINS- Chicken	8%	30%	33%	22%	7%
Fish	4%	22%	9%	48%	17%
Egg	12%	29%	43%	14%	2%
Tofu	3%	10%	8%	37%	42%
Pulses	14%	23%	41%	17%	5%
Cereals	21%	21%	27%	22%	9%

Interpretation

Participants who reported less frequent consumption of fruits and vegetables may have a comparatively lower intake of antioxidant vitamins and micronutrients important for maintaining scalp health and supporting normal hair growth.

6.14 Dairy Product Consumption

Milk and dairy products were included because they contribute protein, calcium, vitamin B12, and other nutrients relevant to overall nutritional status.

Figure 8. Frequency of Dairy Product Consumption

Dairy Product	Daily	Once a Week	Twice or Thrice a Week	Rarely	Never
Milk	23%	20%	23%	26%	8%

Interpretation

The dietary assessment showed variability in dairy intake among participants, suggesting differences in the consumption of nutrient-rich foods that support general health and hair maintenance.

6.15 Sugar and Processed Food Intake

The questionnaire assessed participants' preference for sugary foods and processed snacks as indicators of dietary quality.

Table 11. Consumption of Sugary and Processed Foods Dietary

Behaviour	Observation
Dietary Behaviour	Observation
Sugary food preference	Assessed
Processed food consumption	Assessed
Fast-food intake	Assessed

Interpretation

Frequent consumption of sugary and processed foods reflects dietary patterns that may displace nutrient-dense foods and reduce overall diet quality. Such dietary behaviours may indirectly affect hair health by limiting the intake of essential vitamins and minerals.

6.16 Lifestyle Factors Associated with Hair Health

Lifestyle variables including stress, sleep duration, and physical activity were analysed alongside dietary practices.

Table 12. Lifestyle Factors Evaluated

Variable	Assessment
Stress	Self-reported
Sleep duration	Daily hours of sleep
Physical activity	Frequency of exercise
Lifestyle pattern	Sedentary, moderate, active

Interpretation

The findings indicate that dietary habits and lifestyle behaviours coexist and may

collectively influence hair health. Participants reporting unhealthy dietary practices often also described higher stress levels, inadequate sleep, or reduced physical activity, highlighting the multifactorial nature of hair-related concerns.

6.17 Overall Summary of Results

The study identified several important observations:

- Hair loss was highly prevalent among the study participants.
- Most respondents had a normal BMI, suggesting that hair loss occurred across different nutritional status categories.
- Unhealthy dietary practices, including meal skipping and processed food consumption, were common.
- Daily consumption of home-cooked meals was reported by many participants, but overall dietary quality varied.
- Food frequency assessment demonstrated differences in the intake of protein-rich foods, fruits, vegetables, and dairy products.
- Lifestyle factors such as stress, inadequate sleep, and limited physical activity were frequently reported and may have contributed to poor hair health.

The present study evaluated the influence of dietary habits on hair health among female adults aged 18–25 years residing in Hyderabad. The findings indicate that hair health is influenced by a combination of nutritional, behavioural, and lifestyle-related factors.

Although a majority of participants were within the normal BMI range, a high prevalence of self-reported hair loss was observed, suggesting that body weight alone does not adequately reflect nutritional status or predict hair health.

Several unhealthy dietary practices were identified among the participants, including frequent consumption of processed foods, meal skipping, irregular eating patterns, and a preference for sugary foods. These habits may reduce the intake of proteins, vitamins, minerals, and other micronutrients essential for normal hair follicle function. In addition, moderate to high stress levels, inadequate sleep, and low participation in physical activity were commonly reported, highlighting the multifactorial nature of hair loss.

The findings underscore the importance of adopting balanced dietary practices rich in high-quality proteins, fruits, vegetables, whole grains, healthy fats, and essential micronutrients. Lifestyle modifications, including regular physical activity, adequate sleep, and stress management, should be encouraged as part of a comprehensive strategy to promote healthy hair growth. Nutrition education and early preventive interventions among young adults may help reduce the burden of hair-related problems and improve overall well-being.

G. Strengths of the Study

The present study has several strengths:

- It addresses an increasingly important public health concern among young female adults.
- It simultaneously evaluates dietary habits, anthropometric characteristics, lifestyle factors, and hair health within a single study.
- Data were collected through both online and offline surveys, enabling participation from individuals with varied educational and occupational backgrounds.
- The inclusion of a Food Frequency Questionnaire (FFQ) provided additional insight into habitual dietary intake.
- The structured questionnaire allowed systematic assessment of demographic, nutritional, lifestyle, and hair-related variables.
- The findings contribute baseline data that may support future nutrition- and lifestyle-based interventions aimed at improving hair health.

10. LIMITATIONS OF THE STUDY

Despite its strengths, the study has certain limitations:

- The study included a relatively small sample size of 100 participants.
- Participants were recruited using convenience sampling, which may limit the generalisability of the findings.
- Information was self-reported and may therefore be affected by recall bias or reporting bias.
- Biochemical investigations to assess nutritional deficiencies were not performed.
- Hair loss was evaluated through participant responses rather than clinical examination.
- As the study employed a cross-sectional design, causal relationships between dietary habits and hair health cannot be established.

11. RECOMMENDATIONS

Based on the findings of the present study, the following recommendations are proposed:

1. Nutrition education programmes should be organised to increase awareness regarding the role of balanced diets in maintaining healthy hair.
2. Young adults should be encouraged to consume diets rich in proteins, iron, zinc, vitamins A, C, D, E, B-complex vitamins, and essential fatty acids.
3. Regular meal patterns should be promoted while discouraging meal skipping and excessive intake of processed and sugary foods.
4. Lifestyle modification strategies focusing on stress reduction, adequate sleep, and regular physical activity should be incorporated into health promotion programmes.
5. Healthcare professionals should provide dietary counselling as part of the assessment and management of individuals presenting with hair loss.
6. Future studies should include larger and more diverse populations to improve external validity.
7. Prospective longitudinal studies and clinical investigations should be undertaken to better understand the long-term relationship between dietary habits and hair health.
8. Future research may also include biochemical assessment of nutritional status to strengthen the association between dietary intake and hair health.

12. CLINICAL IMPLICATIONS

The findings highlight the importance of considering nutritional and lifestyle factors during the evaluation and management of hair loss. Healthcare professionals, including dermatologists, nutritionists, dietitians, and primary care physicians, should integrate dietary assessment and lifestyle counselling into routine clinical practice for individuals with hair-related concerns. Early identification of unhealthy dietary behaviours may facilitate timely intervention and improve long-term hair health outcomes.

13. ETHICAL APPROVAL

Participation in the study was voluntary. Participants were informed about the purpose of the research before completing the questionnaire, and confidentiality of all responses was maintained throughout the study. The research procedures followed the ethical practices described in the thesis.

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