Hair Fall and Malnutrition Related Health Issues Among Abroad Students in Osh State University

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ABSTRACT

Background: The problem of hair loss affects students as a widespread health issue because it results from nutritional deficiencies, stress, and changes in daily routines. The foreign study experience leads to irregular body rhythms through new academic requirements, different eating patterns, and altered living environments, resulting in nutritional deficiencies that harm hair health.

Objectives: This study investigates how malnutrition affects hair loss in international students at Osh State University, collecting data on eating habits, lifestyle, stress levels, and hair fall symptoms.

Methods: This study was conducted using a survey-based questionnaire distributed via Google Forms among international students at Osh State University. The structured questionnaire assessed dietary habits, hair fall severity, scalp conditions, stress levels, sleep patterns, lifestyle habits, and nutritional deficiency symptoms.

Results: Most students (85.6%) experienced moderate to severe hair fall. A total of 91.1% reported associated scalp symptoms. Over 80% experienced weight loss after relocating abroad. Nearly half (47.4%) had never undergone nutritional testing. Vitamin D deficiency (11.1%), iron deficiency (9.6%), and protein deficiency (9.6%) were the most common diagnosed deficiencies. More than 86% reported moderate to high stress levels.

Conclusions: Hair fall among international students is strongly associated with malnutrition, stress, and lifestyle changes following relocation abroad. Maintaining balanced nutrition, managing stress, and regular health check-ups are essential interventions to improve student well-being.

Keywords: *hair loss; malnutrition; international students; nutritional deficiency; student health; balanced nutrition; telogen effluvium; hair health; stress; abroad students*

1. INTRODUCTION

Hair fall (alopecia) is a common health concern among young adults and is often influenced by nutritional, hormonal, psychological, and environmental factors. An individual loses about 50 to 100 hairs daily because this process is part of the natural hair growth cycle which includes anagen, catagen and telogen phases. Stress, micronutrient deficiencies, systemic illness, and lifestyle changes cause excessive hair shedding. Telogen effluvium represents the most common hair loss type which students experience because of their high stress levels, poor dietary habits, and sudden changes in their surroundings.

Malnutrition — especially through iron, protein, zinc, vitamin D, vitamin B12, and other micronutrient deficiencies — has a major impact on hair health. Iron deficiency anemia reduces oxygen supply to hair follicles, resulting in hair thinning. Protein-energy malnutrition disrupts keratin production, causing structural hair damage. Vitamin D affects how hair follicles function, and its deficiency leads to increased hair loss. Proper nutrition is therefore essential for normal hair growth.

Students who study abroad belong to a group that faces higher risks of hair fall and malnutrition. When students move to new countries, they must adapt to new dietary patterns while managing financial budgets, handling academic responsibilities, and dealing with new weather conditions. Many students rely on processed or fast foods due to time constraints, resulting in meals that do not deliver necessary nutrients. Academic pressure, homesickness, and cultural adjustment stress also lead to hormonal imbalances which result in hair loss. Extreme cold, dry weather, hard water conditions, sleep disturbances, and poor lifestyle habits further worsen the problem.

2. REASONS FOR HAIR LOSS

2.1 Nutritional Deficiencies and Hair Loss

Nutritional deficiencies such as low protein, iron, zinc, vitamin D, and vitamin B12 can affect hair follicle growth and lead to excessive hair shedding.[10]

2.2 Stress and Metabolic Changes

Hair loss may occur when the body experiences metabolic stress, illness, hormonal changes, or emotional stress, which triggers excessive shedding — a condition known as telogen effluvium.[12]

2.3 Diet Restriction and Protein Deficiency

Crash dieting, low protein intake, and calorie deficiency can disturb the hair growth cycle and lead to diffuse hair loss.[13]

2.4 Micronutrient Deficiency and Hair Cycle Disturbance

Students affected by deficiencies in vitamin D, vitamin B12, and zinc — due to improper and insufficient food intake — can experience impaired hair follicle function, scalp weakening, and increased hair shedding.[13]

2.5 Environmental Factors

Students experiencing climatic changes where temperatures fall below 0°C, exposure to polluted environments, and bathing with hard water may sustain damage to hair and scalp health.[10]

3. REASONS FOR MALNUTRITION

Malnutrition occurs when the body does not receive adequate macronutrients — proteins, carbohydrates, fats — and micronutrients such as vitamins and minerals required for normal growth, metabolism, and body functions. Several factors contribute to malnutrition, especially among students living in hostels abroad.[14]

3.1 Poor Dietary Intake

The main cause of malnutrition is inadequate consumption of balanced meals. Diets low in proteins, fruits, vegetables, and essential micronutrients lead to deficiencies in iron, vitamin B12, vitamin D, and other nutrients. Students living abroad often rely on fast foods, junk foods, or processed meals, which are low in essential nutrients.[14]

3.2 Irregular Eating Habits

Students skip meals due to busy academic schedules, financial constraints, or limited cooking facilities. This leads to insufficient nutrient intake and energy imbalance.[14]

3.3 Lifestyle and Stress

Students experiencing stress, lack of sleep, fatigue, and unhealthy lifestyles show reduced appetite, decreased absorption, and negatively affected eating patterns, leading to poor nutritional intake.[14]

4. METHODOLOGY

This study was conducted using a survey-based questionnaire design among international students at Osh State University. All data were collected using structured questions distributed through Google Forms. The survey included questions related to general information, hair fall assessment, dietary habits, frequency of balanced meals, daily intake of protein-rich foods, intake of fruits and vegetables, and the presence of symptoms related to nutritional deficiencies. Questions about hair fall severity, scalp conditions, stress levels, sleep patterns, and lifestyle habits were also included. Student participation in the survey was voluntary, and all responses were kept confidential. The collected data were analyzed to identify patterns and possible associations between hair fall and nutritional factors among students.

5. SURVEY RESULTS

5.1 Hair Fall Severity

The majority of students (50.8%) reported moderate hair fall, indicating noticeable thinning. A significant proportion (34.8%) experienced severe hair fall, suggesting visible hair loss or excessive shedding. Only 14.4% reported mild hair fall, which is considered normal daily shedding. Overall, most students were experiencing abnormal levels of hair loss, possibly due to underlying nutritional or lifestyle factors.

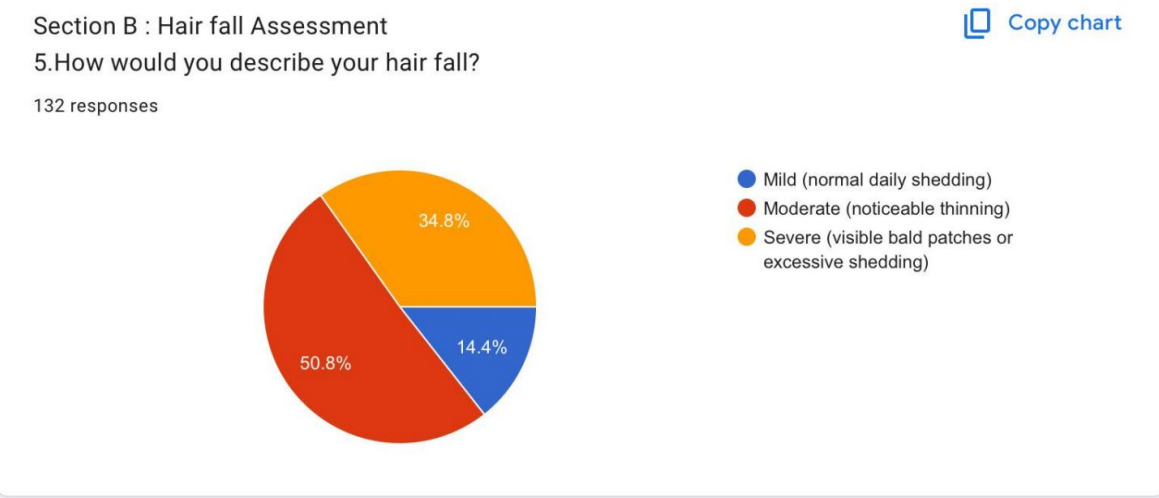

Figure 1. Distribution of hair fall severity among international students.

5.2 Associated Scalp Symptoms

A very high percentage of students (91.1%) reported associated symptoms such as scalp itching, dandruff, dryness, or brittle hair, while only 8.9% reported no such symptoms. This indicates that scalp and hair-related problems are highly prevalent among international students. These symptoms may be linked to nutritional deficiencies, environmental changes, or poor hair care practices.

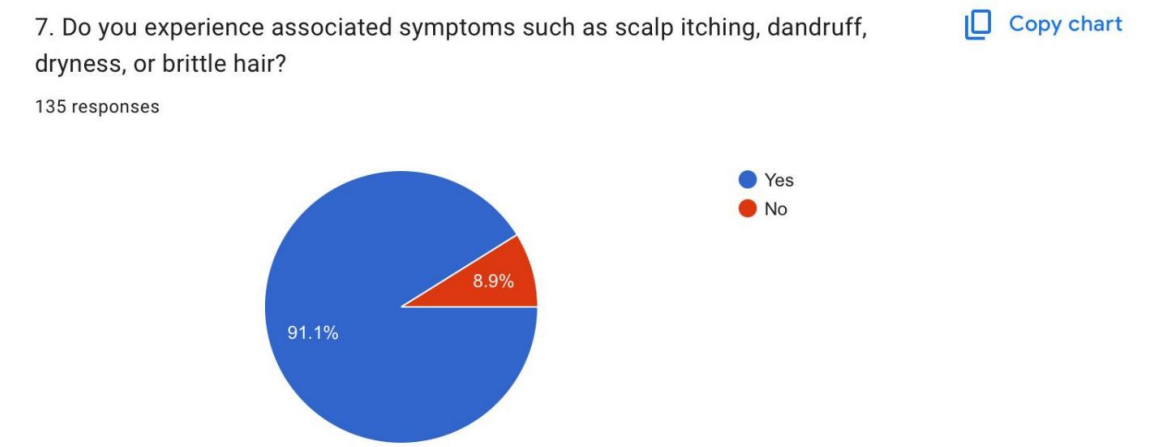

Figure 2. Prevalence of associated hair fall symptoms among students.

5.3 Balanced Meal Consumption

Survey results show that 43% of students consumed only one balanced meal per day, while 23.7% consumed two balanced meals. Only 7–8% consumed three or more balanced meals — considered adequate. Notably, 25.9% reported consuming no balanced meals at all, indicating a high risk of malnutrition. These findings suggest that a large number of students have inadequate dietary intake, which may contribute to both malnutrition and hair fall.

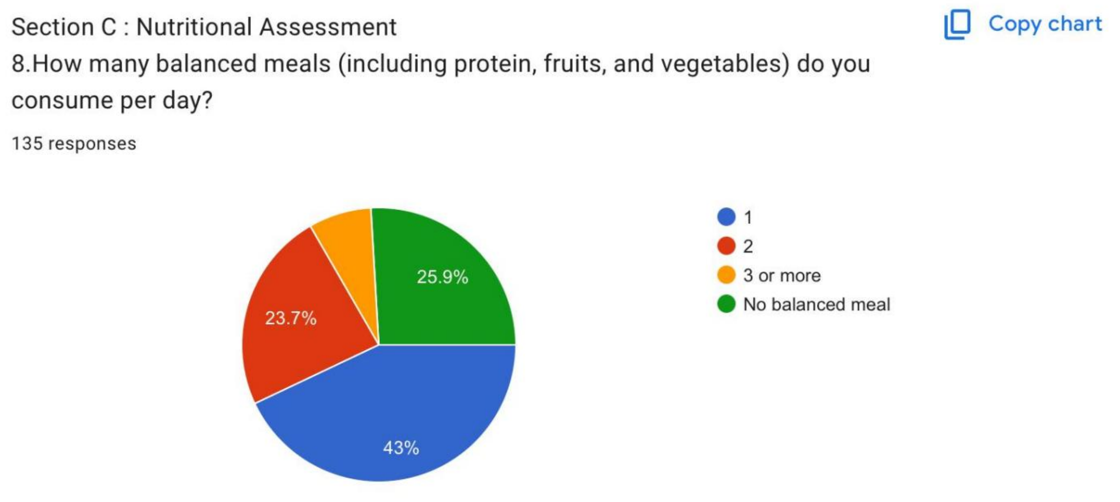

Figure 3. Number of balanced meals consumed per day by students.

5.4 Weight Loss After Relocation

A significant number of students experienced weight loss after relocating abroad. The highest proportion (43.3%) reported losing 3–5 kg, followed by 23.1% who lost more than 6 kg. About 20.1% lost 1–2 kg, while only 13.4% reported no weight loss. This result suggests that more than 80% of students experienced some degree of weight loss — likely due to irregular meals, dietary changes, stress, or financial constraints — which may indicate malnutrition strongly associated with hair fall.

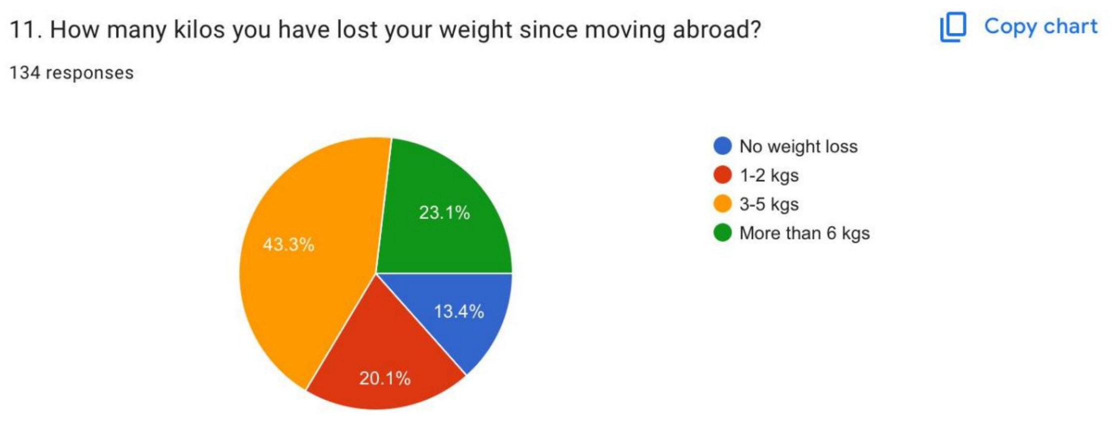

Figure 4. Weight loss reported by students after relocating abroad.

5.5 Nutritional Deficiency Status

Nearly half the students (47.4%) had not undergone any nutritional testing, indicating a lack of awareness or access to health check-ups. Among those diagnosed, vitamin D deficiency (11.1%) was the most common, followed by iron deficiency/anemia (9.6%), protein deficiency (9.6%), and vitamin B12 deficiency (8.9%). An additional 13.3% reported no diagnosed deficiencies. These nutrients are crucial for hair growth, and their deficiencies may play a major role in hair loss and poor health outcomes.

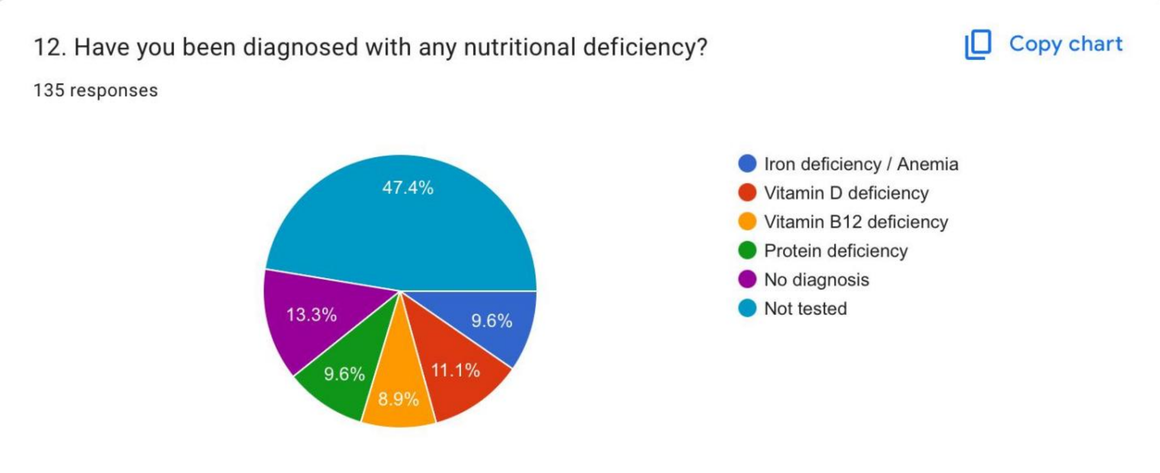

Figure 5. Nutritional deficiency status among surveyed students.

5.6 Stress Levels

The majority of students experienced moderate to high stress levels after moving abroad. The largest group (46.3%) reported moderate stress, closely followed by 40.3% experiencing high stress. Only 9% reported low stress, and a very small proportion had no stress. This indicates that academic pressure, lifestyle changes, and environmental adjustment significantly contribute to stress among international students, which in turn negatively affects body health and is a known contributing factor to both hair fall and nutritional imbalance.

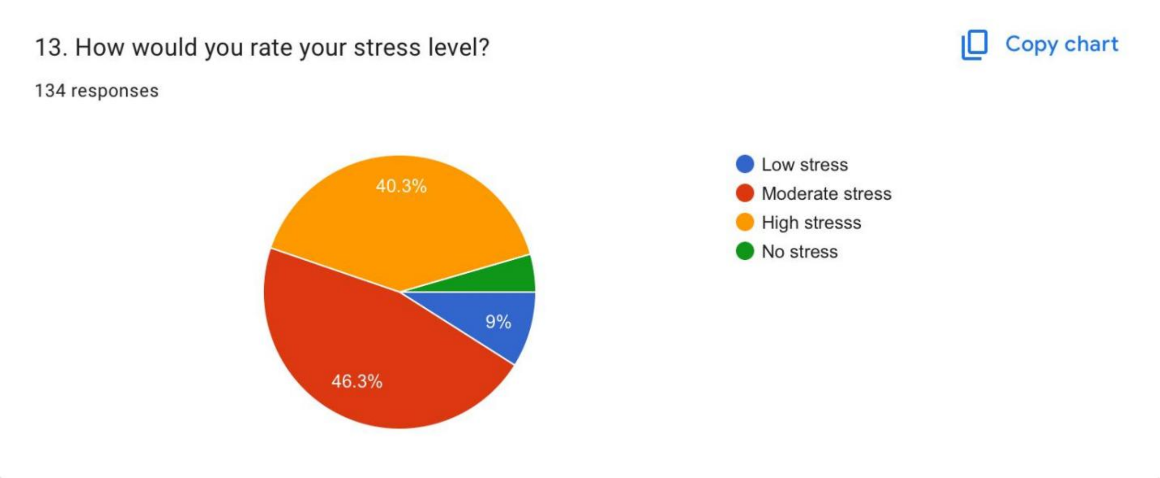

Figure 6. Stress levels reported among international students.

6. RESULTS

The survey results indicate that students studying abroad experience significant health challenges related to stress, nutrition, and weight changes. A large majority of students reported moderate to high stress levels (over 85%), highlighting the impact of academic pressure and adaptation to a new environment.

In terms of nutritional status, nearly half the students (47.4%) had not undergone any nutritional testing, while a considerable proportion of those tested showed deficiencies in vitamin D, iron, protein, and vitamin B12. This suggests that nutritional problems are common but frequently unrecognized.

More than 80% of students reported weight loss after moving abroad, with most losing 3–5 kg or more, indicating a possibility of malnutrition and inadequate dietary intake.

Overall, the results suggest a strong association between stress, poor nutrition, and weight loss among abroad students, which may lead to health issues such as hair fall and decreased overall physical and mental well-being. These findings emphasize the need for better awareness, regular health check-ups, balanced diet, and stress management among students living abroad.

Table 1. Key Nutritional Deficiencies, Their Effects on Hair Health, and Prevalence Among Study Participants

Nutrient	Role in Hair Growth	Effect of Deficiency	Common Food Sources	Recommended Daily Intake	Prevalence in Study
Iron	Oxygen delivery to hair follicles via hemoglobin	Telogen effluvium, hair thinning, miniaturization	Red meat, spinach, lentils, fortified cereals	8–18 mg/day	9.6%
Protein	Keratin synthesis; structural component of hair shaft	Brittle hair, diffuse hair loss, poor regrowth	Eggs, chicken, legumes, dairy, tofu	0.8–1.0 g/kg/day	9.6%
Vitamin D	Activates hair follicle cycling and stem cells	Increased shedding, alopecia areata risk	Fatty fish, fortified milk, egg yolk, sunlight	600–800 IU/day	11.1%
Vitamin B12	DNA synthesis and red blood cell formation	Premature hair loss, scalp dryness, graying	Meat, eggs, dairy, fortified cereals	2.4 mcg/day	8.9%
Zinc	Cell proliferation, repair and sebaceous gland function	Scalp inflammation, hair thinning, dandruff	Nuts, seeds, whole grains, shellfish, meat	8–11 mg/day	Not tested
Biotin (B7)	Fatty acid synthesis supporting hair structure	Weak, brittle hair strands, hair breakage	Eggs, almonds, sweet potato, sunflower seeds	30 mcg/day	Not tested

Source: Survey data collected from international students at Osh State University, 2025.

7. CONCLUSION

Hair fall is a common problem among students studying abroad, linked to several daily lifestyle and health-related factors. When students migrate to another country, their daily routine, food habits, and environment change significantly. Busy academic schedules and the absence of home-cooked food push many students into irregular eating patterns with reliance on fast food or quick meals. Not only diet, but other factors like stress, lack of sleep, and lifestyle changes also affect hair health.

Students studying abroad may face academic pressure, homesickness, and adaptation to a new environment, which increases stress levels. Irregular sleep patterns and unhealthy daily routines worsen the problem. Maintaining good nutrition and a healthy lifestyle is important to prevent both malnutrition and hair loss. Eating balanced meals with sufficient protein, vitamins, and minerals will support healthy hair growth. Managing stress levels, getting enough sleep, and practicing proper self-care will improve overall body health.

This article aims to create awareness among international students at Osh State University about the importance of balanced nutrition and healthy habits, helping them maintain better physical well-being while studying abroad.

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