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On

Applied Zoology, Profitable Animal Production, and Health: Current Status and Future
Progress (NSAZ-2022) 23rd & 24th September- 2022

Recent Trends in Applied Zoology

Dr.D.S.Rathod
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Dr. K.S.Raut
Mr.Datta Nalle

National Edited Book

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Recent Trends in Applied Zoology

Edited by: Dr.D.S.Rathod

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Chapter -12

Correlation of nutritional status of college girl students with hemoglobin level and BMI in Latur, Dist. Latur.

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Abstract: Haemoglobin percentage in blood is the key indicator of Human health. The person who's Hb is at normal range is showing the normal BMI generally, there may be any exception. Generally it is found that women's have less Hb than Men due to the natural feminine characters. But generally it is known that girl students are unaware about the healthy habits essential to maintain BMI and Hb percentage in blood. The Girl students don't pay attention towards the Fruit, Vegetable, Milk, Meat, Fish, Chicken, Meat, Eggs etc as per the diet type either VEG or NON VEG. To focus this problem among college girl students this topic was selected and studied in this premises.

Key words-Hb, BMI, Girl students,

1] **INTRODUCTION:**

BMI and Hb percentage in blood are the most important factors related to our life, both play a great role in the determination of human health. The body mass index (BMI) is a value derived from the mass (weight) and height of an individual person. The BMI is defined as the body mass divided by the square of the body height and is universally expressed in units of kg/m², resulting from mass in kilograms and height in meters.

The BMI is an attempt to categorize quantify the amount of tissue mass (muscle, fat, and bone) in an individual, and then that person as underweight, normal weight, overweight, or obese based on that value commonly accepted BMI ranges are

- Underweight: normal weight: from 18.5 to under 25,
- Overweight: 25 to under 30
- class I obesity: from 30 to under 35 less 18.5 kg/m²
- class II obesity: from 35 to under 40
- Class III obesity: 40 or more.

BMI provides a simple numeric measure of a person's thickness or thinness, allowing health professionals to discuss weight problems more objectively with their patients. BMI was designed to be used as a simple means of classifying average sedentary (physically inactive) populations, with an average body composition. Hemoglobin has an oxygen-binding capacity of 1.34 mL O₂ per gram, which increases the total blood oxygen capacity seventy-fold compared to dissolved oxygen in blood.

The mammalian hemoglobin molecule can bind (carry) up to four oxygen molecules. In these organisms, hemoglobin may carry oxygen, or they may act to transport and regulate other small molecules and ions such as carbon dioxide, nitric oxide, hydrogen sulphide and sulfide. The hemoglobin level is expressed as the amount of hemoglobin in grams (**gm**) per deciliter (**dL**) of whole blood, a deciliter being 100 milliliters. The body needs iron to make hemoglobin, which is a protein found in red blood cells. That carries oxygen. Insufficient iron in the diet can lead to anemia. The body lacks sufficient red blood cells when one suffers from anemia. As you might have noticed, anemic people are always dull and lifeless. A lack of iron can also make it harder to lose weight. It is simple. When you're suffering from iron deficiency, your body is unable to make sufficient red blood cells, so you have less energy. Due to this lack of energy or fatigue you can't exercise and stay active physically. As a result of not exercising and living a sedentary lifestyle you will burn lesser calories and this can hamper your weight loss. So, if you want to lose weight you should make sure that you don't have iron deficiency. Including iron rich food in your diet will solve the problem.

A lack of iron in your body can result in sudden weight loss. This is chiefly due to a decrease in appetite. On the other hand it can also make it harder to lose weight. It is simple logic. When suffering from iron deficiency, your body is unable to make sufficient red blood cells, so you have less energy. Due to this lack of energy or fatigue you can't exercise and stay active physically. As result of not exercising you will burn lesser calories and this can hamper your weight loss. So, if you want to lose weight you should make sure that you don't have iron deficiency. Including iron rich food in your diet will solve the problem.

Sources of Iron to increase hemoglobin: -

- Shellfish is tasty and nutritious.
- Spinach provides many health benefits for very few calories.
- Liver and Other Organ Meats. Organ meats are extremely nutritious
- Legumes are loaded with nutrients.
- Pumpkin Seeds, and Quinoa,
- Eat lean red meat: Turkey

This is the best source of easily absorbed heme iron. .Eat chicken and fish: These are also good sources of heme iron. Consume vitamin C-rich foods: Eat vitamin C-rich foods during meals to increase the absorption of non-heme iron. If any of your levels are abnormal, it does not necessarily indicate a medical problem needing treatment. Diet, activity level, medications, a women's menstrual cycle, and other considerations can affect the results. In addition, you may have higher than normal hemoglobin if you live in a high altitude area. Talk to your health care

provider to learn what your results mean. Your health care provider may have ordered the test as part of a routine exam, or if you have:

- Symptoms of anemia, which include weakness, dizziness, pale skin, and cold hands and feet
- A family history of thalassemia, sickle cell anemia, or other inherited blood disorder
- A diet low in iron and minerals
- A long-term infection

Excessive blood loss from an injury or surgical procedure Hemoglobin and Functions of Iron. About 70 percent of your body's iron is found in the red blood cells of your blood called hemoglobin and in muscle cells called myoglobin. Hemoglobin is essential for transferring oxygen in your blood from the lungs to the tissues.

5 Ways to increase Hemoglobin

1. Eat Iron-rich food.
2. Increase Vitamin-C Intake.
3. Increase Folic acid intake.
4. Drink Nettle Tea. [Stinging nettle is a plant in genus *Urtica* that originated as a native shrub in colder regions of Europe and Asia and is now found worldwide. It gets its name from the hairs on its leaves and stems that release irritating chemicals when they contact to your skin.]
5. Avoid Iron blockers.

2] MATERIALS AND METHODS

The present study was conducted for knowing the percentage of Hemoglobin and BMI among the UG and PG Students at Latur [Geographical location 18.43⁰ N and 76.73⁰] S for this Blood samples for HB percentage were collected from different UG classes of the Rajarshi Shahu Mahavidyalaya [A], Latur. The work was conducted in December-March 2022-2023. The blood samples were collected from undergraduate and Postgraduate students and were analyzed with standard method [Sahlie's HB Method] in the research Zoology and Fishery Sci. Laboratory. 100 under graduate and post graduate girl students of the Rajarshi Shahu College Latur with age group between 18 and 22 years were evaluated for hemoglobin levels. The students were made aware of the purpose of the study and taken their consent. The measurement of Hb was relied on the services of our well-equipped research laboratory, using standard hematocytometer with comparator which is reliable and accurate. This system is manual blood cell counter which measures hemoglobin using HCL method and

was carried out by pricking the middle finger with disposable needle. Criteria for anemia among these students were accepted as hemoglobin value <12 gm/dl as per W.H.O. recommendations.

For calculating BMI, height of students was measured using standardized meter scale with parallel bar (accuracy ± 0.2 cm). Weight was measured with the non-electronic weighing scale (accuracy ± 1 kg). The subjects were asked to remove their footwear and accessories before measuring their weights. Scales were calibrated after each measurement. Accuracy of weighing scale was verified from time to time against known weights. Body mass index (BMI) was calculated as body weight (in Kilograms)/height (in meters) squared.

If your low hemoglobin count is related to an inadequate intake of iron in your diet, consume Iron-rich foods daily. Sources of iron include liver, eggs, beef, dried beans, and enriched whole-grain Cereals, oysters, molasses, peanut butter and pork.

Body Mass Index. - Body Mass Index is a simple calculation using a person's height and weight. The formula is $BMI = \frac{kg}{m^2}$ where kg is a person's weight in kilograms and m^2 is their height in meters squared. A BMI of 25.0 or more is overweight, while the healthy range is 18.5 to 24.9.

The BMI was calculated with the help of following standard formula.

$$\frac{\text{BMI}=\text{Weight [kg]}}{\text{Height in meters}^2}$$

3] Result and Discussion:-

In the present investigation 100 girl students of age group 19-22 years were evaluated for Hemoglobin levels. The haemoglobin levels ranged between 7.0 to 14.0 g/dL. The percentage of Students with severe, moderate, mild and non-anemia were 2, 30, 28, and 40 respectively. These results clearly suggested that 70% of the graduate and post graduate girl students were having mild to moderate anemia and 2% girls were severely anemic.

The BMI values have shown that 27% students belonged to the normal weight category, 72% were underweight, and none Overweight and obese. When BMI was calculated it was found that only 27% students have normal BMI it means that 72 % students are under weight or under normal BMI

Table no: - 1 Hemoglobin percentage and diet –weight exercise in undergraduate students in Rajarshi shahu college, Latur during year 2022-23

BMI Range

No/Range	Under weight	Obese/O verweigh t	Normal weight	Total
Percentage	72%	1%	27%	100%

Table no:-2 Showing the number of girl students and the percentages with different levels of anemia ((g/dL).

	Severe	Moderate	Mild	Non anemia	Total
No of students	2	30	28	40	100
Percentage	2	30	28	40	100

Conclusion:-

Adolescent girls and post-adolescent girls are at major risk of nutritional anemia particularly iron deficiency anemia. Iron requirements increase dramatically due to expansion of the total blood volume, lean body mass, and their entry into the reproductive cycle soon after menarche. The problem of anemia arises mainly due to lack of balanced and nutritious diet which forces them to get into anemic condition over a period of time.

Therefore, it is essential to improve nutritional status of a girl who further makes up the family and society, which is possible only by implementing health education, early detection and effective of anemia, especially through diet. The present study also clearly emphasizes the need for implementing the above said measures at college levels as nearly 86 % of girl students tested are under anemic state[Severe+ Moderate + Mild]. BMI exploration correlates with clinical risk factors for cardiovascular disease. Nearly 93 % students under study are underweight and shows the need for health education to improve the BMI and health status.

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