

A Short Study on Iron Deficiency in Hostels Using Data Collection Form

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Abstract:- The study was done to evaluate the iron deficiency in the hostel students with the help of the anaemia checklist. Data was collected with the help google form link. The data was analysed and differentiated based on gender, BMI, questionnaire. From our study we have concluded that iron deficiency was mostly common in the underweight females because of their poor nutritional diet in hostel. Mostly females were effected with iron deficiency i.e.206 out of 268. Most common symptom is hairfall followed by dark under-eye circles and headache. Our main moto of study was identifying anaemia in adults and improve them with the dietary supplements.

Keywords:- Anaemia Checklist, DMT1, Ferroportin, Hepcidin.

I. INTRODUCTION

➤ Iron Deficiency

It is a condition where the body doesn't have enough iron to meet its needs. Anaemia, or the body having too few healthy red blood cells, is frequently caused by an iron deficiency. Iron deficiency during pregnancy increases the baby's risk of developmental delays. Iron deficiency anemia is the most common and most treatable of all anemias. There is an evolving understanding that iron deficiency can lead to symptoms and can be associated with a variety of diseases. This review covers iron metabolism as well as the epidemiology, diagnosis, and treatment of this common anemia⁽¹⁾.

➤ Iron Metabolism

Meat is the food which has the highest iron content among other foods. The majority of iron in food is found in the ferric form (Fe^{3+}), which is converted to the ferrous form (Fe^{2+}) by stomach acid. Two receptors on the mucosal cells in the jejunum take up iron. Thirty to forty percent of ingested heme iron is absorbed by one receptor, which is specialized for heme-bound iron. The second receptor, divalent metal transporter 1 (DMT1), which is 10% less effective at absorbing inorganic iron. Ferroportin is responsible for exporting iron from the enterocyte and delivering it to plasma transferrin, which is the primary iron transport molecule. Ferritin is the storage protein for iron. The ferritin protein consists of 24 ferritin subunits that create a shell that can store up to 4500 iron molecules. By attaching to the transferrin receptor on the red cell membrane, transferrin can transport iron to the liver for storage or to the

marrow for usage in the formation of red blood cells.

The protein that stores iron is called ferritin. Up to 4500 iron molecules can be stored in the ferritin protein's shell, which is made up of 24 ferritin subunits. Iron that is contained in hemoglobin in senescent red blood cells is recycled by binding to ferritin in the macrophage. It is then transferred to transferrin for recycling into developing red blood cells and is sent to storage. This system is extremely efficient and losses less than 5% of the iron contained in total red cell mass⁽²⁾. The protein hepcidin controls iron absorption and iron's release from stores. Hepcidin binds to ferroportin, leading to its degradation. When hepcidin degrades ferroportin, iron cannot be released from the enterocyte or hepatocytes, this leads to both lack of iron absorption and a halt in iron release to developing red cells. Hepcidin synthesis is upregulated not only by iron but also by inflammation. These levels can be reduced by hypoxia, increased erythropoiesis, and iron deficiency. Recommended dietary iron intake is 8 mg daily for adult men and 18 mg for premenopausal women, it can be increased to 27 mg daily during pregnancy⁽²⁾.

➤ Epidemiology

In the United States, the incidence of iron deficiency in men is approximately 1% but it is more than 11% and often higher in women⁽³⁾.

➤ Etiology

Given that there is no natural mechanism for the body to excrete iron, the predominant mechanism for iron deficiency is blood loss, most commonly from menstrual periods or gastrointestinal bleeding. The next major cause is issues with the absorption of iron. Both of these can be compounded by the influence of iron-poor diets.

• Menstrual losses:

Due to the obligatory iron losses associated with menstruation, women are more likely to develop iron deficiency. On average, women lose 35 milliliters of blood, or 16 mg of iron per period^(6,7,8).

• Gastrointestinal loss:

The next main source of iron deficiency is intestinal bleeding. Iron deficiency is caused by gastrointestinal lesions, which cause gradual blood loss over extended periods. The

most dangerous cause of blood loss is neoplasm, which affects up to 10% of elderly individuals with iron deficiency anemia⁽²⁾.

- *Cancer:*

The most dangerous cause of blood loss is neoplasm, which affects up to 10% of elderly individuals with iron deficiency anemia. The most frequent tumor is gastric cancer, which is followed by lesions of the upper gastrointestinal tract. Because they are rare, small bowel tumors are typically not checked unless bleeding or refractory iron deficiency is present. Other common causes of blood loss include gastritis and ulcers.

- *Helicobacter pylori:*

There are multiple ways in which *Helicobacter pylori* infections cause iron deficiency⁽⁹⁾. First, infection raises the possibility of developing ulcers, particularly stomach ulcers. Second, infection causes achlorhydria, which impairs iron absorption and makes it impossible to change ferric iron into ferrous iron. *H. pylori* infections can also result in autoimmune gastritis, which can cause iron and vitamin B12 deficiency in the early stages⁽¹⁰⁾.

- *Aspirin and NSAIDs:*

Both aspirin and nonsteroidal anti-inflammatory agents can lead to iron deficiency due to over bleeding from ulcers and/or increased gastrointestinal blood loss^(4,5). Studies showed the use of daily aspirin increases blood loss from 0.8 mL per day to 5.0 mL per day⁽⁵⁾.

- *Symptoms*

Iron deficiency can cause symptoms in addition there can be some other symptoms like Fatigue, tachycardia, and lack of endurance.

- Unusual cravings for eating clay or ice, known as pica, can happen.
- Fatigue
- Cold intolerance
- Headaches, moodiness, anxiety
- Muscle weakness
- Hair loss
- Pale skin or lips
- Restless legs
- Rapid breathing
- Sleep issues

- *Anaemia Checklist:*

An anemia checklist serves as a valuable tool to assess and identify potential indicators of anemia, a condition characterized by a deficiency of red blood cells or hemoglobin in the blood. This checklist helps individuals and healthcare professionals recognize common symptoms associated with anemia. By noting specific signs such as fatigue, pale skin, shortness of breath, and other relevant factors, the checklist aids in early detection and prompts further medical evaluation.

- *Need For Study:*

This study aims to bring new insight into iron deficiency among hostel students around 268 students who are staying in hostel. there are rising expectations of iron deficiency among the students. Therefore, our goal is to give a brief overview of iron deficiency.

- *Aim:*

A short study on iron deficiency in hostels using data collection form.

- *Objectives:*

- To determine the iron deficiency in hostel girls and boys.
- To determine the nutritional deficiency in hostel population.

II. MATERIALS AND METHODS

The study was done at different private hostels in Hanamkonda, Warangal, Telangana, India. this was a prospective observational study. There were 400 subjects in the whole study.

- *Sources of data*

All the relevant and necessary data was collected from the Google form.

- *The form included in the study*

- Subject details
- Data collection form
- Anaemia checklist

- *Study procedure*

- Google form was created according to the anemia checklist
- Subjects who are staying in hostels were enrolled.
- Subjects' responses were recorded in the google form.
- The data gathered from the 400 subjects throughout the period were examined.
- The summarized data was entered in Microsoft Word.

III. RESULTS

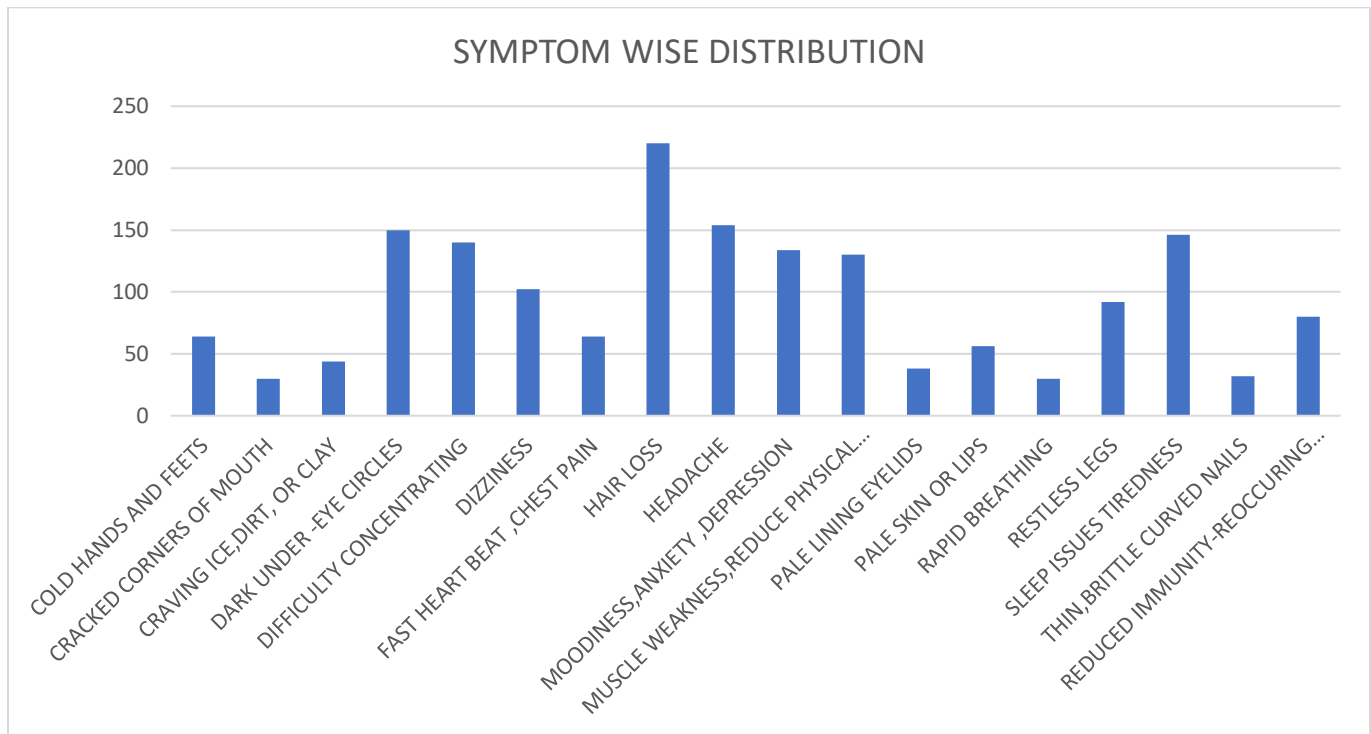


Fig.1 symptoms wise distribution of iron deficiency

Among the population, the common symptom is hair fall followed by dark circles and headaches. The least common symptom is rapid breathing.

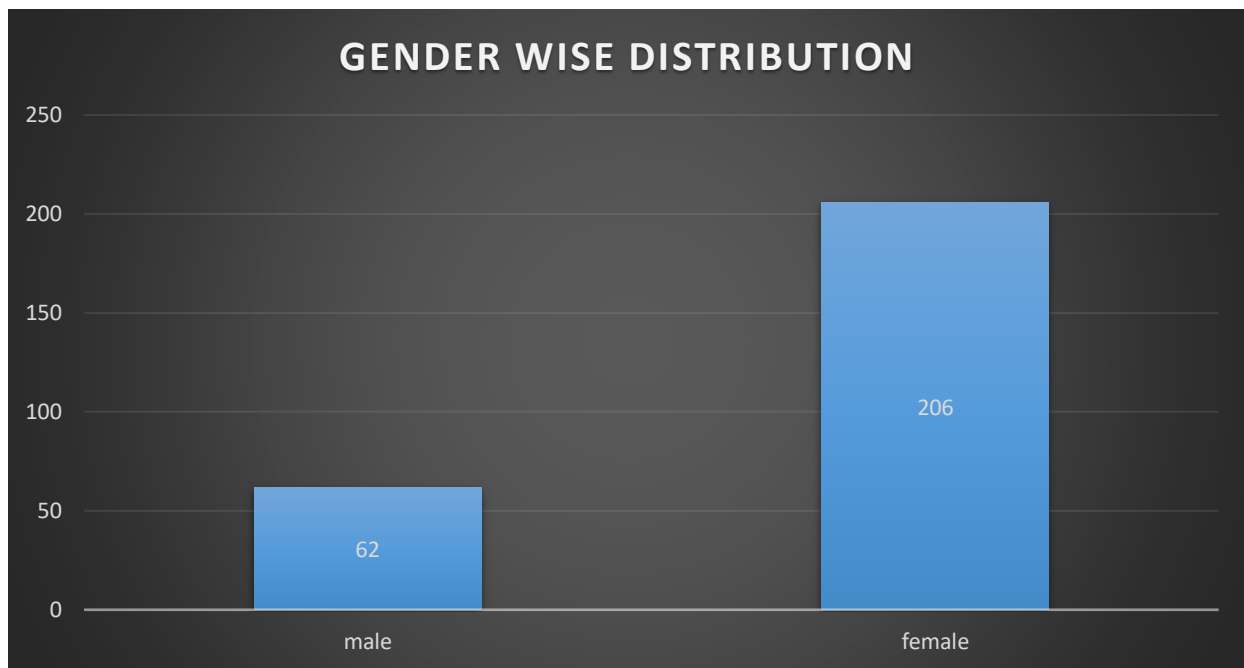


Fig.2 gender wise distribution of iron deficiency

Among the population age wise distribution of iron deficiency showa mostly effected gender is female than male.

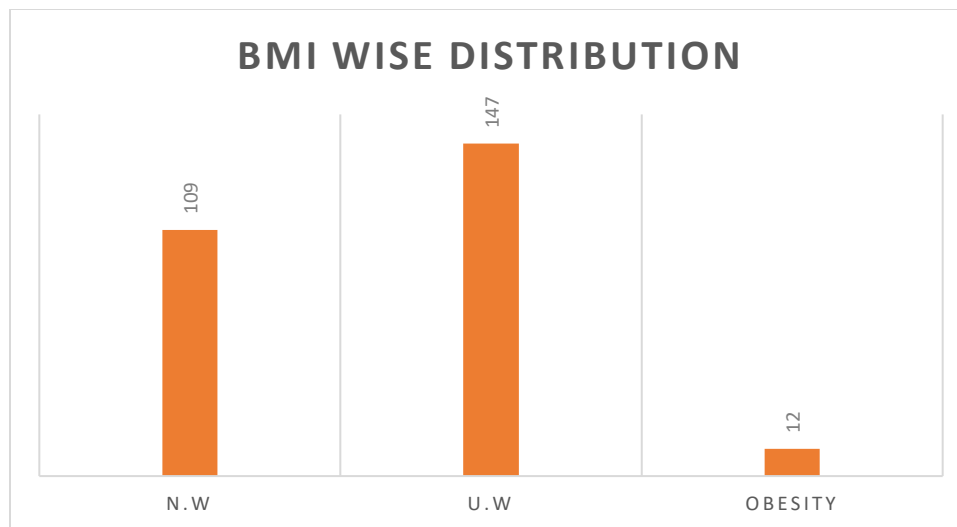


Fig.3 BMI-wise distribution of iron deficiency

Among the total population, 147 were underweight followed by normal weight and obesity.

IV. DISCUSSION

Now a days anaemia cases are increasing because of poor nutritional dietary supplements. The adult anaemia cases are increasing day by day. Females are mostly effected when compared to males. In our study out of 268 people 206 females are experiencing the anaemia symptoms. All the 206 are staying in hostels. Persons who are with anaemia are experiencing hairloss, headache, dark under-eye circles, difficulty concentrating, sleep issues tiredness, muscle weakness, moodiness, anxiety, depression. Underweight people are mostly experiencing the iron deficiency. We have advised iron supplementsto improve their Hb and to improve the symptoms of anaemia. Our main moto of study was identifying anaemia in adults and improve them with the dietary supplements.

V. CONCLUSION

According to our short study we concluded that iron deficiency is most common in underweight females because of poor dietary intake in hostels. Iron deficiency was high in hostels because of less nutritious food.

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