DOI: https://doi.org/10.53350/pjmhs22167713

ORIGINAL ARTICLE

Iron Deficiency Anemia and its Relation with Junk Food

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ABSTRACT

Purpose: Aim of this study was to find iron deficiency anemia and the relationship between people who consumed junk food.
Study design: Observational survey base study
Method: This study was conducted from March 2022 to May 2022. The data of this study was collected through a questionnaire filled by people of age 18 to 35 years. **C**onsent was attached at the end of the questionnaire that informed the purpose of the data collection and shows the willingness of the participant. The participant who filled out the questionnaire were 200 in number. The data about fast food was gathered using a food frequency checklist that has 25 different fast commonly eaten by people. Body weight and height were used to find the BMI and hemoglobin level was checked using the hematology analyzer at the clinical laboratory of the hospital. The study was approved by the Health Research Ethical Committee of the hospital.
Results: Out of 200 participants 50 (25%) were male and 150 (75%) were females. the number of participants having an age greater than 18 years was 136 (68%) and having an age less than 35 years was 64 (32%), most people were educated with a literacy rate of 190 (95%) and 10 (5%) were not educated. Overall anemia awareness was found in 85 (42.5%) people and 115 (57.5%) did not know about anemia. Based on family income, we divided into three groups where the numbers of people from low-income families were 13 (6.5%), the middle class was 40 (20%) and the high income was 140 (73.5%). While checking the hemoglobin level of all we come out with 13(15%) participants with normal hemoglobin levels and 170 (85%) patients were found with anemia having Hb level Anemia<12mg/dL. Out of 170 anemic patients, 20 (11.76%) patients were underweight, 90 (52.94%) patients were of normal weight, 30 (17.65%) were anemic with overweight and 30 (17.65%) were obese. For all measured mean ±, SD = 28.5 ± 2.33. we found a greater number of iron deficiency anemia patients with moderate activity mean ± SD value for physical activity, 54 ±11.76, and fewer people with regular breakfast. Junk food consumption was high in anemic patients 155 (91.17%) and 135 (79.41%) anemic patients with daily junk food consumption. Results of Spearman correlation show mean ± SD was 140 ± 10.11 with a positive correlation of r value 3.05 and significant p-value 0.02. Anemia with 142 ± 9.56 with positive correlation results with r value 1.04 and p-value 0.03.
Conclusion: We concluded that a positive correlation shows the direct proportion relationship between junk food and anemia that was higher the consumption of junk food higher the chances of anemia occurrence, lesser the consumption of junk food lower the chances to be anemic.
Keywords: Anemia, junk food, iron deficiency

INTRODUCTION

Worldwide anemia cases have been increasing every year, as per the WHO data, 50% of anemia cases have been reported while 30-47.5% cases are found in developing countries and 4.2-20% in developed countries. It can be found at any stage of life even pregnant women and children are more susceptible which is another reason for its high morbidity and mortality rate.[2]

Nutritional deficits are important aspects of adolescent life that have a potent effect on human body metabolic activity and induced metabolic disorders like anemia.[3] Although, anemia is a common disorder of red blood cells and their insufficient oxygen-carrying capacity to meet the basic physiological requirements.[4] Various dietary and other factors are associated with its incidences such as vitamin A, folate, iron deficiency, vitamin $B_{12,}$ and chronic inflammation. While iron deficiency is considered the main cause that leads the insufficient iron to produce RBC.[4-5]

Dietary habits have also influenced the prevalence of anemia low dietary intake can be the reason to develop an anemia condition. Improper diet or unhealthy eating behavior like high consumption of junk food that consists of low micronutrients specifically iron, high fat, salt, and calorie intake results increase in the chances to develop anemia.[6-7] Moreover, anemia was also reported in female adolescents who have the improper intake of iron and loss of iron from the body during menstruation.[8]

In this era where people have maximum awareness about healthy eating and good eating habits. But still, the consumption of processed food is high which is imposing deleterious effects on human health. Therefore, supporting the healthy development of adolescents is one of the best investments that any society can do.[9-10] So, in this study we aimed to determine the relationship between anemia and consumption of junk food.

METHODOLOGY

Study design: This study was observational survey-based research, conducted from March 2022 to May 2022. The data of this study was collected through a questionnaire filled by people of age 18 to 35 years. The questionnaire was designed to determine the demographical information as well as to assess the nutritional status and anemia-related knowledge. It included multiple questions such as age, gender, BMI, family income, breakfast intake, junk food consumption/day, and how many people have awareness of anemia. While height and weight were measured by standardized methods.

Consent was attached at the end of the questionnaire that informed the purpose of the data collection and shows the willingness of the participant. The participant who filled out the questionnaire were 200 in number. The data about fast food was gathered using a food frequency checklist that has 25 different fast commonly eaten by people. Body weight and height were used to find the BMI and hemoglobin level was checked using the hematology analyzer at the clinical laboratory of the hospital. The study was approved by the Health Research Ethical Committee of the hospital.

Exclusion criteria: The people who had a history of any blood disorder, or other chronic disorders of kidney, heart, and pregnant women were excluded from the study.

Inclusion criteria:

- Patients with hemoglobin level <12mg/dl and >12mg/dl
- People have issues with shortness of breath
- High fast food consumption
- Age18-35 years

Statistical Analysis: The assembled information in data form was analyzed in SPSS software version 20. Simply, collected data was evaluated to determine the relationship between junk food

consumption and anemia using the spearman correlation test, its r-value can be negative and positive, negative shows an inverse relationship with the variable while a positive value shows a direct relationship with the variable. Numerical data was calculated through mean, standard deviation, and percentage-wise. A P-value less than 0.05 shows significant results and a p-value higher than 0.05 shows non-significant results.

RESULTS

Table.1 presents the data of all the participants, where out of 200 participants 50 (25%) were male and 150 (75%) were females. the number of participants having an age greater than 18 years was 136 (68%) and having an age less than 35 years was 64 (32%), most people were educated with a literacy rate of 190 (95%) and 10 (5%) were not educated. Overall anemia awareness was found in 85 (42.5%) people and 115 (57.5%) did not know about anemia.

Based on family income, we divided into three groups where the numbers of people from low-income families were 13 (6.5%), the middle class was 40 (20%) and the high income was 140 (73.5%). While checking the hemoglobin level of all we come out with 13(15%) participants with normal hemoglobin levels and 170 (85%) patients were found with anemia having Hb level Anemia<12mg/dL.

Table.2 presented the characteristic of 170 anemic patients. Out of 170 anemic patients, 20 (11.76%) patients were underweight, 90 (52.94%) patients were of normal weight, 30 (17.65%) were anemic with overweight and 30 (17.65%) were obese. For all measured mean ±, SD = 28.5 ± 2.33. To get to know their physical activity; they were divided into high, moderate, and low physical activity. So, the patients with high physical activity were 33 (19.41%), moderate were 105 (61.76%) in numbers and patients with low physical activity were 32 (18.82%). While mean ± SD value for physical activity was 54 ±11.76. More, 82 (48.2%) people responded yes to regular breakfast intake and 88 (51.76%) responded no, and the measured mean ± SD value for the question was 128 ± 8.5.

Junk food consumption was high in anemic patients having 155 (91.17%) and only15 (8.82%) people with no junk food consumption response and the measured mean ± SD value was 162 ± 5.4. For more precise results we found 135 (79.41%) anemic patients with daily junk food consumption and 35 (20.58%) responded with no daily junk food consumption and the measured mean ± SD value was 141 ± 5.7.

Table.3 represents the results of the Spearman correlation, where the mean ± SD was 140 ± 10.11 with a positive correlation of r value 3.05 and a significant p-value of 0.02. Anemia with 142 ± 9.56 with positive correlation results with r value 1.04 and p-value 0.03. The positive correlation shows the direct proportion relationship between junk food and anemia that was higher the consumption of junk food higher the chances of anemia occurrence, the lesser the consumption of junk food lower the chances to be anemic.

Table 1: Demographic and anthropometric profile of participants

Variables	Number of participants N =200(%)
Gender	
Male	50 (25)
Female	150 (75)
Age (years)	
>18	136 (68)
<35	64 (32)
Education	
Literate	190 (95)
Illiterate	10 (5)
People with anemia awareness	85 (42.5)
People have no anemia awareness	115 (57.5)
Family income	
Lower class	13 (6.5)
Middle class	40 (20)
High income	147 (73.5)
Hemoglobin level	
Non-anemia ≥12 mg/dL	30 (15)
Anemia<12mg/dL	170 (85)

Table 2: Characteristics of 170 anemic patients

Variable	Anemic patients data n= 170	Mean ± SD
BMI/age of anemic patients n= 170		28.5 ± 2.33
Underweight	20 (11.76%)	
Normal weight	90 (52.94%)	
Overweight	30 (17.65%)	
Obese	30 (17.65%)	
Physical activity		54 ±11.76
High	33 (19.41%)	
Moderate	105 (61.76%)	
Low	32 (18.82%)	
Regular breakfast		128 ± 8.5
Yes	82 (48.2%)	
NO	88 (51.76%)	
Junk food consumption		162 ± 5.4
Yes	155 (91.17%)	
No	15 (8.82%)	
Junk food intake/day		141 ± 5.7
Yes	135 (79.41%)	
No	35 (20.58%)	

SD = Standard Deviation

Table 3: Relationship between junk food consumption and anemia

Variable	Mean ± SD	R	P
Junk food	140 ± 10.11	3.05	0.02
Anemia occurrence	142 ± 9.56	1.04	0.03

Spearman correlation test

DISCUSSION

Iron deficiency anemia is one of the most common micronutrient deficiency disorders. It mostly occurred because of an iron deficit intake diet or because of unhealthy eating habits. While its detrimental effects are commonly developed in children and adults of different age groups.[11] Usually, long-term iron deficiency has not shown any clinical symptoms until it becomes severe.[12] However, another study about anemia among adolescents demonstrated that a significant association was found between the socio-demographical characteristic and their lifestyle. Essentially, they required proper counseling and awareness regarding anemia in adolescence.[13]

Fast food is high in calories, and carbohydrates and can interface with nutrient absorption like iron, and calcium because of the high level of phytate in wheat for fast food.[14] Junk food has low fiber and is high in calories that affect the fat adipocyte in the body to inflammation.[15] The bad eating habits and routine did not meet the daily iron intake as insufficient iron-rich foods or higher intake of iron inhibitors like tea.[16] In our study the anemic people 51.76% that were not eating breakfast and (91.17%) preferred junk food while people who were used to the daily intake of junk food were (79.41%). So, in the present study percentage of people of anemic patients who prefer junk food consumption was high in number. Therefore, consuming junk food regularly could enhance anemia cases. Noteworthy, in this study, 85% of people were anemic and the majority belonged to the high-income family. Moreover, we found most people were educated but they did not have knowledge about anemia. For more evidence, another study about the prevalence of iron- deficiency anemia among the students demonstrated that students especially females were suffering from iron-deficiency anemia because of poor intake of iron-rich food and lack of awareness. [17-18] Although we found a positive relationship between iron deficiency anemia and junk food. Therefore to reduce iron-deficiency anemia cases we should change our eating habits and follow a healthy routine regarding a balanced diet that protects us from any nutritional deficiency disorders.

CONCLUSION

Eventually, we concluded that if the consumption of junk food is higher then, the chances of anemia are greater. Further, we

observed that a very less number of people know about anemia, so it's very essential for us to be aware of the people with iron-deficiency anemia, especially those who preferred more junk food over traditional or common food. Counseling is the basic need that will help to reduce anemia cases.

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