The Professional Medical Journal
www.theprofesional.com

DOI: 10.29309/TPMJ/18.4449

ORIGINAL PROF-4449

NUTRITIONAL DEFICIENCY ANEMIA;

ROLE OF JUNK FOOD IN NUTRITIONAL DEFICIENCY ANEMIA AMONG YOUNGSTERS

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Article received on:
24/10/2017
Accepted for publication:
15/03/2018
Received after proof reading:
00/00/2018

ABSTRACT: Nutritional anemia is emerging health issue affecting all the age groups but more prevalent among the youngsters due to poor eating habits and consumption of more junk food which lacks essential ingredients. The aim is to determine the frequency of anemia and to find its association with junk food among medical students. **Study Design:** Cross sectional study. **Setting:** Comprises of 100 students was conducted at Aziz Fatimah Medical and Dental College Faisalabad. **Period:** Six months, 01-01-2017 to 30-06-2017. **Methodology:** After ethical approval all relevant information including age, height, BMI, consumption of junk food and other dietary habits were taken on predesigned proforma. Hb levels were checked by Sahil's method in department of Physiology to evaluate the relation of anemia with junk food. Data was analyzed by SPPS 20. **Results:** Study also revealed that 55(49.1%) of the study participants were consuming junk food frequently. Among the junk food consumers 69.1% were anemic and their hemoglobin levels were lower than non –consumers of junk food. Regression analysis shows negative association between junk food and hemoglobin levels (P value 0.009). **Conclusion:** Anemia is frequently found in junk food consumers then non junk food consumers.

Key words: Anemia, Eating Habits, Hemoglobin, Junk Food, Sahil's Method.

Article Citation: Altaf B, Khan MB, Aftab RK, Jawed S, Salam RMT, Amir F. Nutritional deficiency anemia; role of junk food in nutritional deficiency anemia among youngsters. Professional Med J 2018; 25(7):1018-1023.
DOI:10.29309/TPMJ/18.4449

INTRODUCTION

Anemia is a common health issue affecting all age groups and gender worldwide, with a prevalence of 36 % in developing countries.[1] Among all anemias, nutritional anemia is most prevalent in young age group between 18-25 years of age.[2] Prevalence of nutritional deficiency anemia in young adults is attributed to poor eating habits, for instance, consumption of junk foods, skipping healthy meals on time, less fruit intake, growing utilization of fizzy drinks.[3] These all trends lead to the risk for deficiencies in micro and macro nutritional substances which lead to nutritional deficiency anemia and obesity among this age group.[4] Strong evidences are available showing that among overweight and obese children, adults were suffering from iron deficiency more frequently.[5,6] Negative association between BMI and Hb is documented by previous researches.[7] However, some researchers refuted their findings and reported anemia in normal weight individuals.[8,9] Due to these inconsistent results there is a need to study the association between Hb and BMI. Nutritional anemia is still a public health issue in industrialized and non-industrialized countries.[10] It remain undiagnosed in areas even with advance health care facilities.[11] Anemia is associated with irritability, poor work capacity, vulnerable mood,[15] and learning difficulties.[10] Eating habits play a pivotal role in the development of iron deficiency anemia. Previous Indian studies have revealed that iron deficiency anemia is more prevalent in vegetarians than in non-vegetarians. This is because of the presence of non heme iron

which has poor bioavailability than animal source Hb.[12] Many of the green vegetables containing large amounts of iron also contain oxalic acid which binds and decreases its utilization by the body tissues. Previous researches also show that increased consumption of tea among indo –pak individuals has led to high amounts of tannic acid and caffeine that are responsible for poor absorption of dietary iron.[13] Higher prevalence of anemia is also attributed by a decreased intake of vitamin C rich foods as it augments their iron absorption.[1] Foods like pasta, burger and pizza bread and wheat contain high levels of phytates which decrease absorption of iron and cause anemia.[14] All these factors attribute towards nutritional anemia in the young population. Trend of eating junk food is increasing in Pakistan because most of the people have changed their life style and eating habits due to urbanization and modernization.[15] The trend keeps increasing because of the craving taste, fun, and home delivery services provided by many food chains that is mushrooming at brake neck pace. Not only the elite class, but also the middle and lower classes have been effected by this trend.[16] majority of the population is unaware of the fact that Junk food has low amount of essential ingredients which makes it a major threat to human health.[15]

AIM

The aim of this study was to determine the frequency of anemia and to find its association with junk food among the medical students as this age group is more vulnerable to get anemia due to unhealthy dietary habits.

METHODOLOGY

This is the Cross sectional study comprising of 112 medical Students, performed at Aziz Fatimah Medical and Dental College Faisalabad. After ethical approval from the ethical review committee of the institute, students were enrolled by convenience sampling technique in the study. Main objective of the study was briefly explained prior to the enrollment in the study. Then predesigned proforma was given to all included students to assess the age, gender and dietary habits specifically the consumption of junk food, fruit intake, vegetables and meat consumption. To exclude the other causes of anemia, history about worm infestation and hemoglobinopathies, and menstrual history of enrolled females including age of menarche, length of cycle, duration of bleeding, amount of blood flow and dysmenorrhea were recorded on predesigned proforma.

Subjects having menstrual disorders, hemoglobinopathies, history of worm infestation, dehydration due to any cause and on fluid therapy, renal and cardiopulmonary disorders were excluded from the study.

Anthropometric measurements like height and weight were taken by a stadiometer following all standard protocols. BMI was calculated by weight in kg/height in meter.[2] BMI<18.5 kg/m2 were taken as underweight, BMI 18.5-22.9 kg/m2 were taken as normal weight however BMI with 23-24.9 kg/m2 and BMI>25kg/m2 were taken as overweight and obese respectively.[17]

Hemoglobin levels were determined by Sahil's hemoglobinometer. All the steps were followed carefully to minimize the error. Hemoglobin results were also correlated clinically by general physical examination. Subjects having low levels of hemoglobin were again tested by automated hematology analyzer (Sysmex) at Aziz Fatimah hospital Laboratory for verification. Hb less than 13gm/dl for male and less than 12gm/dl were consider as anemia as per WHO recommendation.[18]

RESULTS

Current study was comprised of 112 participants of age 19.3 ±0.98. Out of total population 58(51.8%) and 54 (48.2%) were male and female respectively. Basic demographics of study population were described in Table-I. Figure-1 is showing that majority of the participants were anemic. On analyzing the dietary habits, we found that 65 (58%) were consuming meat, 29 (25.9%) were vegetarians and 18 (16.2%) of the population were using both meat and vegetables. 44 (39.3%) of participants were using fruits.

	Mean N=112	Std. Deviation
Age	19.31	0.98
Height	167.2	10.58
Weight	64.9	17.07
Waist	32.8	4.45
Hip	37.2	4.027
Hb	11.40	1.705
BMI	23.5	4.93

Table-I. Baseline characteristics of study population
Hb=Haemoglobin, BMI= Body mass index

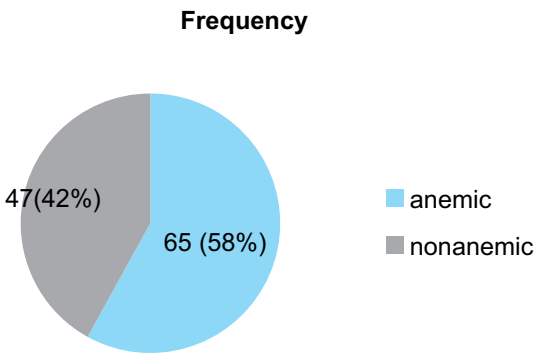

Figure-1. Frequency of anemia in study participants

Study also revealed that 55(49.1%) of the study participants were consuming junk food frequently. Among the junk food consumers 69.1% were anemic and their hemoglobin levels were lower than non –consumers of junk food (Table-II). Regression analysis shows negative association between junk food and hemoglobin levels. Beta coefficient was – 0.839 which was statistically significant (P value 0.009*).

Figure-2 is showing that anemia and trends of eating junk food are is more prevalent in females than males. Significant differences were found in percentages of anemia (P value 0.001 *) and consumption of junk food (P value 0.002*) among the gender.

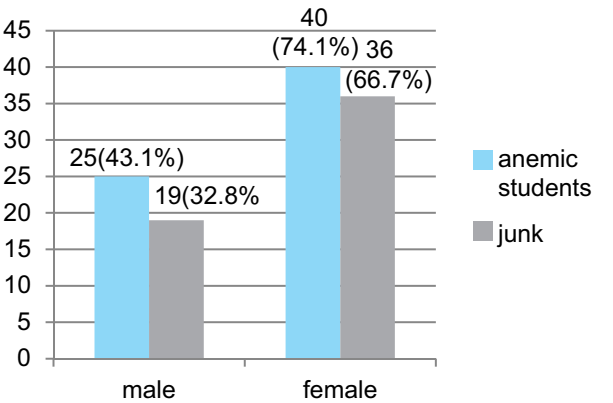

Figure-2. Comparison of frequency of anemia and junk food consumption among the gender
X^2 for comparison of percentages of anemia (p value = 0.001*)
For junk food (p value 0.002*)
P value ≤ 0.05 is taken as significant

Table-III is indicating the regression analysis between BMI and hemoglobin. No significant association was found between them (P value 0.32). Anemia was noted in subjects with low, high and even in normal BMI with 42.9%, 59.7% and 61.3% respectively (P value = 0.46).

Junk Food	Frequency (%) of Junk Food Consumption	Hb Mean ±SD	Anemic Frequency (%)	Non-anaemic Frequency (%)
Yes	55(49.1%)	10.9	38 (69.1%)	17 (30.9%)
no	57 (50.9)	12	27 (47.4%)	30 (52.6%)
P value		0.009*	0.02*	

Table-II. Junk food consumption and anemia among study participants
Hb=Haemoglobin, SD=standard deviation,
Means are compared by Mann-Whitney test, X^2 for comparison of percentages
P value ≤ 0.05 is taken as significant

Variables	Haemoglobin			
	β	S.E.	P value	Confidence interval
BMI	-0.033	0.33	0.32	0.098-0.032

Table-III. Regression analysis between BMI and Hemoglobin
BMI= Body mass index ,β= beta coefficient
P value ≤ 0.05 is taken as significant

DISCUSSION

Current study was conducted to highlight the importance of dietary habits among the young students because now a days young generation is adopting poor eating habits. There is a dire need to spread awareness among people about the consequences of unhealthy dietary ingredients in our everyday life. Animal proteins derived from meat, fish and poultry and fruits containing ascorbic acid augment iron absorption while chelating agents like phytic acid are usually found in grains, pasta, pizza and burgers breads which decrease the absorption of essential nutrients including iron which is required for hemoglobin synthesis[10], calcium and Mg[14] which have pivotal role in bone and teeth development and are required for muscle contraction and cardiac functions. It is evident that presence of chelating agents like phytic acid reduce the pepsin activity and protein digestion in small intestine and diminishes the utilization of essential nutrients.[14] High fat beef, classy grains, added sugar and sodium content are frequently used in fast food preparation which results in high cholesterol, ultimately leading to obesity, cardiac disorder, strokes, type 2 diabetes, cancer, liver disease and many other health ailments in regular consumers of fast food.[15]

Anemia due to a poor diet like consumption of junk food is an emerging issue worldwide.[8]

Parasitic infections, decrease intake, poor absorption of iron and its loss through menstrual flow in females are the leading causes of anemia. Decreased Hb levels due to poor absorption of iron is attributed to increased trends of junk food consumption by youngsters.[11] To lessen these deficiencies iron supplementation and dietary modifications are advised, though in severe cases blood transfusion may be required.[8]

Current study reveals that trends of eating junk food are more common in girls as compared to boys (66.7% v/s 32.8%) hence, the anemia is more prevalent among girls consuming junk food than boys (74.1% V/S 43.1%) study. Significant negative association of junk food with anemia was observed in this study S. (β – 0.839, P value 0.009*).

Similar to our results Chaturvedi D etal[1]study had reported the higher consumption of junk food among the girls and higher incidence of anemia among the participants using more junk food.

Many other previous studies also documented high consumption of junk food among girls[19] contradistinction to this study, Kobayashi etal found more consumption of fast food among male.[20]

Anemia was observed in all the categories of BMI including subjects with low, high and even in normal BMI with 42.9%, 59.7% and 61% respectively (P value = 0.46). However no significant association was found between BMI and hemoglobin levels in this study. Panat et al study is in agreement of our finding that anemia is found in girls with normal weights and did not find any significant association of BMI with anemia.[19] Many other studies in India failed to prove any association between BMI and hemoglobin[21] Qin et al also reported anemia in normal weight individuals.[9] Students are more prone towards eating junk foods as it is convenient to buy and has added flavors unlike the bland taste healthy food. Most of them are unaware that it lacks nourishing ingredients and has serious health ailments. Health awareness programs should be brought into lime light in order to reveal the hazards of eating unhealthy food. At the same time, students should be encouraged to eat balance diet to avoid health problems in future.

CONCLUSION

Trends of eating Junk food are more common in girls as compared to males. Anemia is more prevalent among the girls consuming junk food than non-consumers. Young generation should be motivated to avoid poor eating habits and adopt healthy diet.

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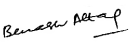
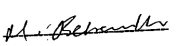
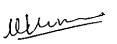
The day you are most uncomfortable are the days you learn the most about yourself.

– Mary L. Bean –

AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author-s Full Name	Contribution to the paper	Author=s Signature
1	Benash Altaf	Study design, data collection, writing the manuscript. formulation of tables.	
2	M. Behram Khan	Study design, data collection, and formatting the manuscript. Reviewed and approved the manuscript.	
3	Rana Khurram Aftaab	Designed questionnaire and write up of manuscript, Reviewed and approved the manuscript.	
4	Shireen Jawed	Study design, statistical analysis, result interpretation, manuscript writing and revising it critically for important intellectual content.	
5	Rana M. Tahir Salam	Data collection, formulation of tables reviewed and approved the manuscript.	
6	Farah Amir	Statistical analysis, interpretation of results, Reviewed and approved the manuscrpt.