

Study on an Associated Dietary Factors Causing Anemia in College Female Students

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ABSTRACT

Anemia, a multifactorial causative problem, has severe impact on the health of human body and stands as a challenge for the society. The severity of anemia depends on the various factors, which need at the earliest diagnosis and treatment. Lots of researches on this issue have been carried-out and published but still there are certain points which have to be evaluated at micro level in various walks of society. Diet is one of the most important factors behind causation of anemia. Frequent changes in dietary habits and dependence on the junk food are becoming a common tradition in youths of today with especially among college and higher studies students. The Aim of current research under taken by me is an initiative in diagnosis of Anemia among females of age group 17- 30 years studying in the college/any higher academic institutions. A well-structured Questionnaire has been designed to collect the necessary information from the respondents in this regard. Current cultural scenario among youths and teenagers in India is significantly influenced by western culture. Propagation of the commercial adds, in print and electronic media by the celebrities, play main role in diverting their mind towards junk food habits. Sound nutrition can play a role in the prevention of several chronic diseases, including obesity, coronary heart disease, certain types of cancers, stroke, and type 2 diabetes.

Keywords: Anemia, Junk food, Nutrition, Questionnaire, Obesity, Coronary heart disease, cancer, Type 2 diabetes.

I. INTRODUCTION

Anemia is most common clinical finding nowadays in majority of the people. According to The World Health Organization 15- 49% women of world have the Anemia (WHO 2001, 2006) and 55% in India according to the NFHS-3 report 2005-2006. Anemia can cause number of symptoms and disorders depending upon its severity. Severe anemia may become life threatening in some situations. It is state of reduced number of red blood cells in blood having lesser quantity of hemoglobin than normal (standard). Anemia goes undetected in many people, and symptoms can be minor or vague. The signs and symptoms can be related to the severity level of anemia itself, or the underlying cause.

General symptoms of anemia are lassitude, dyspnoea, palpitation, pallor i.e. pale skin, mucosal linings and nail beds etc. The major signs seen in anemia are deficiency of iron in food (koilonychias), Pale colour eyes or pale colour of skin or jaundice (i.e. abnormal break down of red blood cells in body that causes hemolytic anemia), deformities of bone seen in the case of thalassemia major and leg ulcers seen in the case of sickle cell disease. Other symptoms like Chronic gastritis, Bleeding gums, swelling of the legs or arms, chronic heartburn or acidity, vague bruises, vomiting, increased sweating, and blood in stool may also be noted sometimes.

There are various causes of anemia, produced by a variety of underlying factors like bleeding disorders, drug induced, nutritional disease, digestive disorders, infections, bone marrow diseases, haemoptysis,

haematemesis, melaena, menstrual disorder, feeling of weakness, or fatigue, sometimes poor concentration and also report shortness of breath, dyspnoea on exertion. In very severe anemic state, the body may compensate for the lack of oxygen carrying capability of the blood by increasing cardiac output.

There are many ways to classified Anemia based on the morphology of RBCs, underlying etiologic mechanisms, and discernible clinical spectra. The common types of anemia are Iron Deficiency Anemia, deficiency of vitamin B12, and deficiency of Folic Acid, hemolytic Anemia, congenital defect, Red cell enzyme defect, Hemoglobin disorder and Aplastic anemia. So, identification of Anemia is very typical. Sometimes it's only symptomatic and later on comes with some major diseases. Many biotechnological tools are developed for identification of anemia e.g. Analyzers' for CBC counting, biochemical counting, Microscopic findings of Bone marrow examination etc. Most of the anemic samples, especially in women, suffer from mild to severe deficiency of iron. The hemoglobin count in most of the young girls in India is below the standard value 12 g/decilitre, the standard accepted worldwide.

Food habits are responsible for keeping our body fit and fine. One should ensure balanced diet to stay healthy and escape from nutritional disorders. In today's life our food habits are also responsible for various types of disorders. Proper dietary choices require the consumption of vitamins, minerals, carbohydrates, proteins and fats. Healthy eating is a matter of balance. Human health is affected both short and long term by what, how much, and how often they eat. A good food which have carbohydrates, fat and protein, vitamins and minerals sufficiently as requirement of body, that gives us nutrients and energy for doing work. With a good food, it is also required to add fiber and water in diet for proper functioning of our digestive system and for a healthier lifestyle. A combination of good food and some

physical exercise habits in our routine makes us healthy and able to fight with infectious diseases.

Less than ideal food habits are common amongst students. Limited time, stress, lack of money and focus on different things, availability of food products in market related with their nutritional value, and junk foods are some common reasons for this. Fast food eating habits is also one of the major causes of this disorder in teenage girls in today's life style. College girls eat more unhealthily than any other group in the population (government survey revealed). That's why they suffer more by this disease Anemia than other age groups. In view of the above discussed facts, the present investigation is to identify prevalence of Anemia in college going female students among 17-30 years age group and also find out which associated factors are more responsible for anemia among them with Evaluating quality control results according to criteria established for each test.

Prevalence of anemia is very common among young children and women of childbearing age. The most common cause is inadequate diet schedule, especially deficient in iron. Hence the consequences of anemia may cause result in the form of developmental delays, clinical disorders including mental anxiety etc. In majority of the instances, anemia among college girls may result because of inadequate awareness towards dietary habits and nutritional requirements. The current health status of the college girls shall determine the forthcoming life schedules and responsibilities of the girls. Therefore, it is of immense importance to make college girls more diet conscious and aware about the health hazards caused by anemia. The present study will help to interact with number of college girls and would generate significant effect in the health status of them.

II. METHODOLOGY

In this study firstly I had Collected College going female students Data, their Clinical History, Family History, Sign & Symptoms. After that there test & Analysis was performed with their Physical Examination (acc.to data available i.e. with filling up of questionnaire), Routine Hematological Examination (after each month) if needed then other test for indicating Anemia with other disorder was also performed for further test Results & Evaluation and that Results shows diagnosis on the basis of collected Data, Tabulation of data, Analysis of Anemic samples in college female students.

2.1. Material and Methods

2.1.1. Symptometry Analysis

firstly, I have to find out the symptoms of anemia with their clinical history, family history and Physical Examination (according to available data i.e. with filling up of questionnaire) of the college going female students. They may be either day scholar or Hosteller with their routine eating habits.

2.1.2. Hematological Analysis

Collection of blood samples of college going female students with special emphasis on Hosteller female students data, Hematological evaluations statical analysis & histogram (Complete Blood Count), Determining of PT(prothrombin time), Determining ESR value, Identification of hematological disorder, Clinical biochemistry. Other Tests and Procedures includes if the CBC results show that student have anemia, it may need other tests such as: Hemoglobin electrophoresis, A reticulocyte count, Tests for the level of iron in your blood and body. These include serum iron and serum ferritin tests. Transferrin level and total iron-binding capacity also test iron levels. Diagnosis of anemia based on medical and family histories, a physical exam, and results from tests and procedures. Because anemia doesn't always cause

symptoms, it may find while checking for another condition.

2.1.3. Analysis of anemic samples

From the hematological analysis done by using automated analyzer of samples, see how many samples are found as anemic. For convenient they are divided according to the dietary habits which are shown in tables.

III. RESULTS AND DISCUSSION

In this study I had taken 1070 college going female students samples from Allahabad and Delhi NCR region. The prepared questionnaire with consent form was filled up with college going female students for including them in this study, which included all the details about their clinical history, family history, their routine, sign and symptoms, blood reports and more important their dietary habits. After studding it was found that, out of these 1070 college going female students 610 females having Anemia and 460 females show no anemia is shown in Fig. 1. When going through with their routine analysis it was found that their eating habits lead the main role in causing illness in their body. In this especially junk food habits play an important role. This was misbalancing their daily nutritional support and later on causes illness. Some females are already founds to be anemic but also suffer by some previous/ past illnesses like Thyroid/ any other hormonal disbalances, menstrual disorders, Tuberculosis, Jaundice, Renal disorders, Leucoderma like chronic illnesses/ diseases. The anemic female students and their eating habits were shown in tables below with justification.

Analysis of sample showing Anemia with Percentage of Anemic Samples & fast food habits of college going female students (Table:3.1).

- ✓ Total No. of Female Students Samples = 1070
- ✓ No. of sample indicating no anemia = 460
- ✓ No. of sample indicating anemia = 610

✓ % of sample indicating no anemia = $46 \times 100 / 107 = 43\%$ ✓ % of sample indicating anemia = $61 \times 100 / 107 = 57\%$

Table 1. Showing Anemic Samples of college going female students with their fast food habits.

SN.	Total no of female students included in the study	Having Anemia	Non Anemia	Students with fast food habits			Total % of anemia	Justification
				Regular	Frequent	Rare		
I.	1070	610	460	431	359	280	57%	I had seen that student with fast food habits affected more which creates nutritional misbalance and cause of anemia in female students. It was found that some other disorder like irregular M.C. Hormonal disbalance, weight loss / gain, Depression, Disturbed sleep/ Insomnia like severe disorders also persist in some cases which cause later on so many diseases.

Calculations of samples showing anemia with percentage according to their eating habits: (Table:3.1)

- ✓ Total no of female students having fast food habits = 1070
- ✓ Total no of female students having Regular fast food habits = 361

- ✓ Total no of female students having Frequent fast food habits = 359
- ✓ Total no of female students having Rare fast food habits = 280
- ✓ % of Female students with Regular fast food habits = $431 \times 100 / 1070 = 40.28\%$

- ✓ % of Female students with Frequent fast food habits = $359 * 100 / 1070 = 33.55\%$
- ✓ % of Female students with Rare fast food habits = $280 * 100 / 1070 = 26.17\%$

In table 1 it was seen that eating habits of female students might cause minor to vague symptoms of anemia. The data shows that the female student having anemia having regular, frequent, rare fast food habits was 40.28 %, 33.55 %, and 26.17 % respectively. When detailed study on this was done then it was found that college going female students who lived in

hostels were suffer the most by this disorder symptomatically because of improper dietary food habits. They were eating either in mess or outside and their food was not to be nutritional rich diet but it was only fulfilling their hunger and taste and in which fast food habits are more common among them. Skipping food like lunch or dinner was also common in them, which is also a responsible factor for their illness. Lack of nutritional deficiency harms them and cause of so many diseases later on in their life. The complete data was shown in table below (3.2):

Table 2

Study No.	Total No. of Female Students	Day scholar female students	Hosteller Female Students	Non Anemic students	Anemic students	Students with Fast food habits			Female Students having other disorder
						Regular	Frequent	Rare	
I	470	240	230	190	280	320	80	70	30
II	600	340	260	200	330	300	180	120	20
Total	1070	580	490	460	610	620	260	190	50

3.2 Table showing day scholar/ hosteller with their dietary habits

It is clear that the nutritional deficiency and eating fast food habit was affected college going females with this symptomatic disorder, which later on originates different disorder or disease in their body. No disease comes in a day its creation takes time. Regular eating unhealthy of nutritional deficient diet slowly - slowly becomes in form of some chronic illness. It was also noted this habit also decreases immune response to fight with different infections/ illnesses.

IV. CONCLUSION

The dietary supplements deficiency affected the college going female students with the upcoming diseases or disorders in their later life in which fast food eating habits are more common among them as we know females needs more nutritional supplements than male, whereas fast food habits only fulfilled their

daily work out requirement because of that have only carbohydrate, fat and no or very less amount of protein which is main nutrient for making body base and improving defense system of females body.

In this study it was found that college going female students cannot eat a proper protein rich / nutritional supplemented diet, that causes nutritional deficiency among them. The habit of eating junk foods / fast food was more common among them which causes deficiencies of iron, vitamins and minerals and so on and they shows different more or less symptoms of anemia like gastric disorder, bleeding disorder, hormonal disbalance, infection, Inflammations or exposure to different infectious diseases and chronic illness like depression, sleeping disorder, leucorrhoea, while further study shows that there may be some other disorder / disease related with severe nutritional misbalanced was also found, It is also clear that females living in hostels prone to this disease because

of their eating habits then day scholar female students. It is clear from the study that an awareness regarding dietary habits will be essential factor for saving their lives by upcoming diseases unless they becomes diseased.

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VI. REFERENCES

- [1]. Abrahamian FD,(nd.). "Anemia,Chronic". <https://www.scribd.com/document/189983084/Anemia>.
- [2]. Blood,The Human Heart. (nd.). <http://www.fi.edu/learn/heart/blood/blood.html>. Published,2009-03-19,Retrieved 2017-04-17.
- [3]. Hebert PC,Wells G,Blajchman MA,et al. (1999). "A multicenter,randomized,controlled clinical trial of transfusion requirements in critical care. Transfusion Requirements in Critical Care Investigators,Canadian Critical Care Trials Group". *N. Engl. J. Med.* 340 (6): 409–17. PMID 9971864.
- [4]. Bush RL,Pevec WC,Holcroft JW (1997). "A prospective,randomized trial limiting perioperative red blood cell transfusions in vascular patients". *Am. J. Surg.* 174 (2): 143–8. doi:10.1016/S0002-9610(97)00073-1. PMID 9293831.
- [5]. Bracey AW,Radovancevic R,Riggs SA,et al. (1999). "Lowering the hemoglobin threshold for transfusion in coronary artery bypass procedures: effect on patient outcome". *Transfusion* 39 (10): 1070–7. doi:10.1046/j.1537-2995.1999.39101070.x. PMID 10532600.
- [6]. McIntyre LA,Fergusson DA,Hutchison JS,et al. (2006). "Effect of a liberal versus restrictive transfusion strategy on mortality in patients with moderate to severe head injury". *Neurocritical care* 5 (1): 4–9. doi:10.1385/NCC:5:1:4. PMID 16960287.
- [7]. Corwin HL,Gettinger A,Pearl RG,et al. (2004). "The CRIT Study: Anemia and blood transfusion in the critically ill-current clinical practice in the United States". *Crit. Care Med.* 32 (1): 39–52. doi:10.1097/01.CCM.0000104112.34142.79. PMID 14707558.
- [8]. Vincent JL,Baron JF,Reinhart K,et al. (2002). "Anemia and blood transfusion in critically ill patients". *JAMA* 288 (12): 1499–507. doi:10.1001/jama.288.12.1499. PMID 12243637.
- [9]. Undersea and Hyperbaric Medical Society. "Exceptional Blood Loss-Anemia". <http://www.uhms.org/ResourceLibrary/Indications/ExceptionalBloodLossAnemia/tabid/277/Default.aspx>. Retrieved 2008-05-19.
- [10]. Hart GB,Lennon PA,Strauss MB. (1987). "Hyperbaric oxygen in exceptional acute blood-loss anemia". *J. Hyperbaric Med* 2 (4): 205–210.

- <http://archive.rubicon-foundation.org/4352>.
Retrieved 2008-05-19.
- [11]. Van Meter KW (2005). "A systematic review of the application of hyperbaric oxygen in the treatment of severe anemia: an evidence-based approach". *Undersea Hyperb Med* 32 (1): 61–83. PMID 15796315. <http://archive.rubicon-foundation.org/4038>. Retrieved 2008-05-19.
- [12]. Editorial Board.(2015). *Molecular Endocrinology*,29(12).
Doi:10.1210/mend.2015.29.issue-12.edboard.
- [13]. Anemia.(nd.). <https://www.merriam-webster.com/dictionary/anemia>. Published 2009-05-25,Retrieved 2017-10-04.
- [14]. Dietary Habits,([Link.springer.com](http://link.springer.com)).
- [15]. National Family Health Survey-3,Report (2005-2006)
http://www.nhlbi.nih.gov/health/dci/Diseases/anemia/anemia_diagnosis.html.
- [16]. Shiu,LK,Loke,WM,Vijya k,Sandhu,NK. "Nurturing healthy dietary habits among children and youth in Singapore". *Asia Pac J Clin Nutr*.2012; 21(1): 144-50.
<https://www.ncbi.nlm.nih.gov/pubmed/22374571>.
- [17]. Essay On Junk Food Junk Food,(nd.).<http://www.indiacelebrating.com/essay/junk-food-essay>. Retrieved 2017-10-04.
- [18]. Ganesh S. "Healthy Eating Habits For Girls- All you need to know".
<https://www.parentcircle.com/article/healthy-eating-habits-for-girls-all-you-need-to-know>. Retrieved 2017-10-04.
- [19]. Sonal,S. "No One Can Eat Just One',And That's Exactly Why Junk Food Is A Big Problem". *Health and Life*.
<https://www.youthkiawaaz.com/2015/08/junk-food-eating-habits-in-india>. Published 2015-08-03,Retrieved 2017-10-04