

A STUDY OF PREVALENCE OF NUTRITIONAL ANAEMIA AND ITS CORRELATES AMONG THE STUDENTS OF G.S.V.M. MEDICAL COLLEGE, KANPUR

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Objectives :

To find out the prevalence of nutritional anaemia and to know the dietary factors and socio-demographic characteristics associated with nutritional anaemia.

Design : Cross sectional study

Setting : Deptt. of Community Medicine, G.S.V.M. Medical College, Kanpur

Participants : Undergraduate Students of G.S.V.M. Medical College, Kanpur

Study variable : Age, Sex, Social class, Dietary habits and Body Mass Index

Statistical Analysis : Percentage and Chi-square test

Introduction :

Nutritional anaemia has been defined by WHO as "a condition in which haemoglobin concentration of blood is lower than normal as a result of deficiency of one or more essential nutrients, regardless of the cause of such deficiency"¹. Nutritional anaemia ranks as one of the most common maladies affecting mankind all over the world leading to severe reduction in productivity and heavy expenses on curative health services.

Nutritional anaemia is a world-wide problem with the highest prevalence in developing countries. It is especially found among women of child bearing age, young children and during pregnancy and lactation.

By far the most frequent cause of nutritional anaemia is iron deficiency, less frequently folate and vitamin B₁₂². Although, most of the habitual diets contain adequate iron amount, only a small percent

(less than 5%) is absorbed³. This poor bioavailability is considered to be a major reason for widespread iron deficiency. In women considerable amount of iron is lost during menstruation. Parasitic infection is the other cause of anaemia.

The students coming in the medical college come from different socio-economic and dietary background pattern. This variation in their socio-economic background and dietary pattern is likely to have an impact over the nutritional status particularly with regard to nutritional anaemia.

Material & Methods :

This study was carried out in the undergraduate medical students belonging to entrance year 2000, 2001 and 2002 of G.S.V.M. Medical College, Kanpur. This study was carried out from 1st March, 2002 to 31st May 2003 in the Deptt. of Community Medicine, GSVM Medical College, Kanpur. These students formed the study population.

contacted and explained about the aims and objectives of the present study. Predesigned and pretested questionnaire to be used in the study was distributed among them. Details regarding various socio-demographics characteristics like age, sex, social class, dietary habits and body mass index were taken. Haemoglobin estimation of all the study population was performed to assess the status of anaemia. Haemoglobin estimation was done by Sahli's method.

The students were stated as anaemic as per WHO criteria (1968)¹

Adult women (non pregnant) → Hb% <12
Adult men → Hb % <13

Anaemia was considered as mild, moderate, severe according to following criteria (De Maeyer, 1989)⁴.

Grade of Anaemia	Hb Concentration (gm/dl)
Mild	10 - <13 (males) 10 - <12 (females)
Moderate	7 - <10
Severe	<7

Those students detected as anaemic underwent various laboratory investigations i.e. Peripheral Blood Examination, Total Red Blood Cell Count, Packed Cell Volume (PCV), Mean Corpuscular Haemoglobin (MCH), Mean Corpuscular Haemoglobin Concentration (MCHC), Serum Iron and Total Iron Binding Capacity (TIBC). These investigations ruled out the non nutritional causes of anaemia.

The data collected was interpreted and analyzed by using tools of biostatistics.

OBSERVATIONS AND RESULTS :

TABLE I : AGE AND SEX WISE DISTRIBUTION OF THE STUDY POPULATION

Age in yrs	Male		Female		Total	
	No.	%	No.	%	No.	%
<20	22	6.5	31	19.2	53	10.6
20-25	309	92.2	128	79.5	437	88.1
>25	4	1.3	2	1.3	6	2.3
Total	335	100	161	100	496	100

Out of total 496 students included in the present study, majority (88.1%) belonged to age between 20-25 years, followed by <20 years (10.6%)

and >25 years (2.3%). Similar trend was observed in males and females also.

TABLE - II : DISTRIBUTION OF ANAEMIA CASES ACCORDING TO THE TYPE OF ANAEMIA

Type of anaemia	Male		Female		Total	
	No.	%	No.	%	No.	%
Nutritional	38	84.4	69	93.2	107	89.9
Non-nutritional	7	15.6	5	6.8	12	10.1
Total	45	100	74	100	119	100

A total of 119 cases of anaemia were detected. Majority (89.9%) were suffering from nutritional anaemia and the remaining 10.1% from non - nutritional anemia.

TABLE - III : AGE - WISE PREVALENCE OF NUTRITIONAL ANAEMIA IN THE STUDY POPULATION

Age in yrs	Students, suffering from nutritional anaemia		Students not suffering from nutritional anaemia		Total	
	No.	%	No.	%	No.	%
<20	14	26.4	39	73.6	53	10.6
20-25	93	21.3	344	78.7	437	83.5
>25	0	0	6	100	6	1.3
Total	107	21.5	389	78.5	496	100

The prevalence of nutritional anaemia is maximum in the age group less than 20 years (26.4%), followed by age group 20-25 years (21.3%). The overall prevalence of nutritional anaemia was 21.5%.

TABLE - IV : SEX-WISE PREVALENCE OF NUTRITIONAL ANAEMIA IN THE STUDY

Sex	Nutritional anaemia cases		Students not suffering from nutritional anaemia		Total	
	No.	%	No.	%	No.	%
Male	38	11.3	297	88.7	335	67.5
Female	69	42.8	92	57.2	161	32.5
Total	107	21.5	389	78.5	496	100

$X^2 = 85.9$

d.f. = 1

$P < 0.05$

The prevalence of nutritional anaemia was found to be higher in females (42.8%) as compared to males (11.3%) and this association between nutritional anaemia and sex was found to be statistically significant. ($P < 0.05$).

TABLE - V : PREVALENCE OF NUTRITIONAL ANAEMIA ACCORDING TO SOCIO-ECONOMIC STATUS

Socio-economic status	Students suffering from nutritional anaemia		Student not suffering from NA		Total	
	No.	%	No.	%	No.	%
Class I	35	15.6	188	84.4	223	44.9
Class II	51	23.6	165	76.4	216	43.5
Class III	21	36.8	36	63.2	57	11.6
Total	107	21.5	389	78.5	496	100

The prevalence of nutritional anaemia showed an inverse relationship with increase in socio-economic

status, the maximum prevalence was present in class III (36.8%) and the minimum in class I (15.6%).

TABLE - VI : PREVALENCE OF NUTRITIONAL ANAEMIA ACCORDING TO THE TYPE OF DIET

Type of diet	Students suffering from nutritional anaemia		Student not suffering from nutritional anaemia		Total	
	No.	%	No.	%	No.	%
Vegetarian	80	45.1	97	54.9	177	35.6
Non-vegetarian	27	8.4	292	91.6	319	64.4
Total	107	21.5	389	78.5	496	100

$X^2=90.7$

d.f. = 1

$P<0.05$

The prevalence of nutritional anaemia was much higher (45.1%) in the students who were consuming vegetarian diet than those who were consuming non-vegetarian diet (8.4%). This

difference in the prevalence of nutritional anaemia in relation to the type of diet consumed was found to be statistically significant ($p<0.05$)

TABLE - VII : PREVALENCE OF NUTRITIONAL ANAEMIA IN FEMALES IN RELATION TO BODY MASS INDEX (BMI)

BMI (Kg/m ²)	Students suffering from nutritional anaemia		Student not suffering from NA		Total	
	No.	%	No.	%	No.	%
<18.5	28	71.7	11	28.3	39	24.2
≥ 18.5	41	33.6	81	66.4	122	75.8
Total	69	42.8	92	57.2	161	100

$X^2=17.59$

d.f. = 1

$P<0.05$

The prevalence of nutritional anaemia was found to be higher (71.7%) in females with BMI <18.5 as compared to females with BMI ≥ 18.5

(33.6%). This difference in prevalence of nutritional anaemia in relation to BMI was found to be statistically significant ($p<0.05$).

TABLE - VIII : PREVALENCE OF NUTRITIONAL ANAEMIA IN MALES IN RELATION TO BODY MASS INDEX (BMI)

BMI (Kg/m ²)	Students suffering from nutritional anaemia		Student not suffering from NA		Total	
	No.	%	No.	%	No.	%
<20.1	28	52.8	25	47.2	53	15.8
≥20.1	10	3.5	272	96.5	282	84.2
Total	38	11.3	297	88.7	335	100.0
X ² =107.7			d.f. = 1		P < 0.05	

Males having BMI <20.1 shows a higher prevalence of nutritional anaemia (52.8%) as compared to BMI ≥20.1 (3.5%). This difference in prevalence of nutritional anaemia in relation to body mass index was found to be statistically significant ($p < 0.05$).

Discussion :

In India, Nutritional anaemia still constitutes a major health problem and is one of most common contributor of mortality and morbidity in all age group and especially among women of reproductive age group.

In the present study, the prevalence of anaemia was found to be higher (45.9%) in females as compared to males (13.4%).

The present study further verified the fact that majority of cases of anaemia were due to nutritional causes.

Reverse association was seen between the socioeconomic status and prevalence of nutritional anaemia in the study population. Lower the socioeconomic status, higher was the prevalence of nutritional anaemia. Rawat et al (2001)⁵ in his study on adolescent girls also observed similar trend of association between the socioeconomic status and prevalence of anaemia.

As regard to type of diet consumed by students, higher prevalence of anemia was found in those

students consuming vegetarian diet (45.2%) much higher than those consuming vegetarian diet (8.4%) and this difference was found to be statistically significant ($p < 0.05$). The results are comparable to the study conducted in Punjab (1998)⁶ which also showed that more vegetarians (65.1%) were anaemic as compared to those who were consuming non vegetarian diet. The increased prevalence of anaemia among vegetarians could be due to poor bio-availability of non-haeme iron and presence of inhibitors of iron absorption in vegetarian food and also other unexplained factors.

The general nutritional status of an individual embraces nutritional anaemia also. The current observation established the fact that prevalence of nutritional anemia was found to be higher in females with Body Mass Index (BMI) <18.5. In males also prevalence of nutritional anaemia was higher with Body Mass Index <20.1. The findings are keeping the strength by observation of National Family Health Survey report of Uttar Pradesh (1998-99)⁷. They have also found higher prevalence of anaemia in females with BMI <18.5 than those with higher BMI.

Conclusion & Recommendation :

The present study has highlighted the magnitude and various correlates of nutritional anaemia. The study shows that even in the medical students, there is a high prevalence of anaemia.

Compulsory haemoglobin estimation of all the students at school and college level should be carried out. Iron and folic acid tablets should be distributed to those found anaemic. Health Education should be imparted regarding the prevention, control and management of nutritional anaemia.

References :

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