



## RESEARCH PAPER

# Impact of diet type on the anemia level of adolescent girls

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**Abstract :** Adolescence is the most vulnerable stage in human life for malnutrition. When the need for nutrients increases during the growth phase. The prevalence rate of malnutrition among adolescent girls (11-18 years) in 11 states and 16 districts, of which 7.1 per cent, was found to be severe anemia, in India, by the recent state-level nutrition plan. Malnutrition is affecting about 50 per cent of the population in India. This problem is affecting women more than men. An estimated 20-40 per cent of maternal deaths in India are due to malnutrition and one out of every two Indian women (56 %) suffers from some form of malnutrition. According to several studies, the prevalence of malnutrition is very high (80-90 %) among pre-school children, pregnant and lactating women and adolescent girls in India. According to a report, more than half (56 %) of adolescent girls in India suffer from malnutrition. Comparing the nutritional status of adolescent girls in India, it was found that 47 per cent of adolescent girls in the age group of 15-19 years in India are victims of undernutrition.

**Key Words :** Malnutrition, Anemia, Diet

**View Point Article :** Bhadauria, Arti, Tiwari, Albha, Chauhan, Beenu Singh and Shah, Poornima (2023). Utilization pattern of earnings of women members of self-help groups (SHG) and constraints faced by the members in running the SHG. *Internat. J. agric. Sci.*, **19** (1) : 90-93, DOI:10.15740/HAS/IJAS/19.1/90-93. Copyright@2023: Hind Agri-Horticultural Society.

**Article History :** Received : 27.06.2022; Revised : 18.10.2022; Accepted : 19.11.2022

## INTRODUCTION

UNICEF 2011, the prevalence of malnutrition among adolescent girls in India is 90 %. The rate of prevalence of malnutrition varies in different states of India. The prevalence of malnutrition in Andhra Pradesh is 33 % which is lowest and Madhya Pradesh has the highest (93 %).

According to the data obtained from NFHS, the prevalence of malnutrition is wide in all age groups, especially in vulnerable groups. Prevalence of anemia in India is 58 per cent among pregnant women, 50 per cent

among non-pregnant and lactating women, adolescent girls (15-19 years) 56 per cent, 30 per cent in teenager boys and 80 per cent in children upto the age of 3 years and 70 per cent in children upto the age of 5 years.

According to NFHS, the prevalence of malnutrition among adolescent girls in Madhya Pradesh is 54 per cent. The status of anemia among adolescent girls in the age group 10-19 years in Madhya Pradesh is shown in Table A.

Anemia is a serious public health problem that affects studies and work capacity in addition to health. It is one of the most prevalent nutritional deficiencies in

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age (years)	Anemia (%)	Mild-Anemia (%)	Moderate anemia (%)	Severe anemia (%)
10-14	99.1	20.7	58.6	19.8
15-19	99.1	19.6	54.924.6	

the world and more than half of India's population suffers from anemia.

According to a report, the prevalence of malnutrition among women in India is the highest in the world, out of which 60-70 per cent of Indian adolescent girls are also victims of anemia.

The main reasons for the high incidence of anemia among adolescent girls are :

- Increase in iron requirement during development.
- Iron loss in menstruation.
- An imbalance between high iron requirement and low iron intake for the formation of hemoglobin.
- Irregular eating habits, dislike of foods high in iron like green leafy vegetables.
- Presence of phytate/tannin, a factor inhibiting iron absorption in food.

Vitamin B12 and folic acid are required for maturation from megaloblastic (stage-1) to postnormoblast (stage-4). Both these vitamins are essential in the synthesis of DNA as coenzymes. If there is a deficiency of vitamin B12 and folic acid, the pronormoblast is affected and the response of the pronormoblast to the normoblast is affected resulting in anemia called megaloblastic anemia. This anemia is demonstrated by the presence of red blood cell counts. The total number of red blood cells decreases. There are two types of megaloblastic anemia namely Pernicious anemia and megaloblastic anemia due to deficiency of vitamin B12 and folic acid.

In malnutrition, hemoglobin is not produced in sufficient quantity. Ferrous iron is required for the formation of protoporphyrin from heme. Globin is not available to combine with proteins to form hemoglobin. The characteristic of this anemia is that the hemoglobin level falls below the normal 11-13 grams per cent. It is the most common form of anemia worldwide, affecting mainly women in the reproductive age, infants and children. Hemoglobin levels vary according to age, which is essential for staying healthy.

The hemoglobin level in the blood for the diagnosis of anemia, according to the criteria of the World Health Organization, is 11 g/dL in pregnant women and children (age between 6 months and 6 years). Less than 12 g/dl

in non-pregnant women and children (6-14 years) and 13 g / dl in adult males should not be less than.

Anemia can occur in the early stages such as infancy (rapid increase in blood volume), adolescent (rapid growth and onset of menstruation in girls) and pregnancy and gestational age due to high iron requirement. Iron loss can occur due to excessive sweating in tropical climates.

## MATERIAL AND METHODS

The current study was done in Gwalior city of Madhya Pradesh. A total of 200 adolescent girls sample size was used in this study. All the respondents were selected by random sampling method.

## RESULTS AND DISCUSSION

The results obtained from the present investigation as well as relevant discussion have been summarized under following heads :

### Regional distribution of respondents regional distribution of respondents :

The above Table 1 shows the regional details of the respondents. For the study, a total of 200 adolescent girls from two different areas of urban area and two villages from rural regions were selected in which 100 rural adolescent girls and 100 urban adolescent girls were included.

Sr. No.	Area name	No. of respondents
1.	Urban area (Gwalior)	
(b)	Shideshwar Nagar	100
	Total	100
2.	Rural area (Gwalior)	
(b)	Chittora	100
	Total	100

### Presence of disease :

Above Table 2, It is clear that out of total 100 rural adolescent girls, 60 are suffering from some kind of disease while 40 are normal.

Similarly, out of 100 urban adolescent girls, 62 have the disease while 38 are normal.

Based on the facts obtained from the interview; fever, cough are common in rural and urban adolescent girls. And diseases like cold, headache, diarrhea, vomiting, typhoid, malaria, chikungunya, worm infection were present, in which most of the selected respondents have headache and cold.

### Interpretation :

The above diagram shows the percentage of presence of the disease in rural and urban adolescent girls. According to which, the percentage of presence of disease in rural and urban adolescent girls is 60 and 62 respectively and the percentage of absence of disease is 40 and 38, respectively.

### Diet type :

The above table shows the food habits of rural and urban adolescent girls. It is clear from this table that out of 100 rural adolescent girls, 87 were vegetarian, egg eater were 8 and non- vegetarian 5.

Out of the total 100 selected urban adolescent girls, 94 were vegetarian non- vegetarian 3 and only 3 are egg

eaters.

At the time of interview, it came to the fore that adolescent girls consume meat and eggs according to the occasion, they are not used to it.

### Interpretation :

In which, 87 and 94 per cent of rural and urban adolescent girls are vegetarian, 8 and 3 per cent consume eggs and 5 and 3 per cent are non-vegetarian.

### Hemoglobin levels :

World Health Organization anemia classified into three categories on the basis of hemoglobin level: mild anemia (10-11 g %), moderate anemia (7-9 g %) and severe anemia (7 g %).

Above table is showing the hemoglobin level of urban and rural adolescent girls. Out of 100 urban adolescent girls, 10 per cent were normal, 45 per cent had mild anemia, 41 per cent had moderate anemia and 4 per cent had severe anemia, while out of total 100 rural adolescent girls, 14 per cent were normal, 32 per cent had mild anemia, 42 per cent had moderate anemia and 12 %) had severe anemia.

From above data, it is concluded that the prevalence

**Table 2 : Rural and urban teenager girls on the basis of disease presence**

Sr.No.	Presence of disease	Rural teenagers		Urban teenagers	
		No.	Percentage	No.	Percentage
1.	Yes	60	60	62	62
2.	No	40	40	38	38
	Total	100	100	100	100

**Table 3 : Classification of rural and urban adolescent girls by type of diet**

Sr. No.	Diet	Rural teenagers		Urban teenagers	
		No.	Percentage	No.	Percentage
1.	Vegetarian	87	87	94	94
2.	Egg Eater	8	8	3	3
3.	Non-Vegetarian	5	5	3	3
	Total	100	100	100	100

**Table 4 : Hemoglobin level of urban and rural adolescent girls**

Sr. No.	Hemoglobin level	Rural teenagers		Urban teenagers	
		No.	Percentage	No.	Percentage
1.	Normal	14	14	10	10
2.	Mild anemia (10-11g%)	32	32	45	45
3.	Moderate anemia (7-9g%)	42	42	41	41
4.	Severe anemia (7 g%)	12	12	4	4
	Total	100	100	100	100

of malnutrition is high in both urban and rural adolescent girls.

### Interpretation:

According to which, among the selected urban and rural adolescent girls; 45 and 32 per cent had mild anemia, respectively, 42 and 41 per cent had moderate anemia and 4 and 12 per cent had severe anemia, respectively.

### Conclusion :

In our research work, we concluded that 88 % of the adolescent girls were suffering from any type of Anemia. The study also reveals that 90 % of the selected teenager girls were vegetarian. Hence, it can be said that the type of diet affects the Hemoglobin level and causes Anemia.

## REFERENCES

**Agarwal, K.N. and Upadyay, S.K. (2017).** Nutritional deprivation, brain growth and function, P 24-25

**Aukett, M.A. (2016).** Treatment with iron increases weight gain and psychomotor development. *Arc. Dis child*, **61** : 849-857.

**Banerjee, Ghosh M. J. (2015).** Reaching out of school adolescent for anemia control, from medical College Vadodara, Gujarat, *The Maternal and child Health Community, Pub. Med.*, 91-92pp.

**Bansal, B. (2013).** Prevalence of anemia in non pregnant

women of western Rajasthan, *A International J. Current Medical Science & Practice* (5) : 15-19.

**Beard, J.L. and Woarton, B.A. (2015).** Iron deficiency in children : Detection and prevention, *Dr. J. Haematal.*, **106** (2) : 270.

**Best, J.W. and Kahn, J.V. (2016).** *Research in education* , New Delhi, Prentice Hall pp.73.

**Bhaodwaj, A. et al. (2013).** Rapid assessment for coexistence of vitamin b12 and iron deficiency Anemia Among adolescent Male and Female in Northern Himalayan state of India, Hindawi Publishing Corporation, pp. 5-7.

**Bhatiya, B.D. (2015).** Methodology of social science & Research, p.19.

**Borg, Walter R. (2015).** *Educational Research an Introduction*, New Delhi, David Meaky Co. pp.162.

**Brabin, J.(2012).** American Journal of Clinical Nutrition, Vol, **47**, P.55.

**Bulliya, G. (2017).** Hemoglobin status of on non-school going adolescent girls in three districts of Orissa, India, *Int. Adolescent Mel. Health*, **19** (4) : 395-406.

## WEBLIOGRAPHY

**Alton, I. (2015).** Guideline for adolescent nutrition services [http://epi.unm.edu/let/pubs/adol\\_bookshtm](http://epi.unm.edu/let/pubs/adol_bookshtm), 2015.

**Brumer (2016).** Understanding Anemia; [http://kidshealth.org/teen/disease\\_conditions/bllood/anemiap2.html](http://kidshealth.org/teen/disease_conditions/bllood/anemiap2.html), 2016.

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