

Impact of garden cress supplementation on prepubertal girls under anemic condition

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■ **ABSTRACT** : Anemia is most common in all the groups of adolescent girls. Preparing them for sound health and accepting the challenges of health problems in their future life, their diet is to be supplemented with traditional iron rich food. So, attempts were made to assess the effect of garden cress supplementation on the iron deficiency anemia in pre-pubertal girls. 240 pre-pubertal girls were selected with the help of equal interval method of randomization ratio. To study the effect of dietary supplementation four different types of treatment were considered. Difference in terms of improvement in anthropometric measurements and haemoglobin were indicative under observation. Majority (69.16%) of respondents had their Hb level in between 8 to 9.8 mg/dl which was greatly influenced by dietary iron and vitamin C. The quantity of daily iron intake in between 11 to 14 mg/dl indicated the positive and effective supplementation on anthropometric status and Hb level in MSG followed by MEG and LIG .

■ **KEY WORDS** : Puberty, Anemia, Anthropometric status, Supplementation, LIG, MEG, MSG

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Anemia is most common in all the groups of adolescent girls to the tune of 20-25 per cent irrespective of all social class. Off the various causes of anemia, in different age groups, in general and pre-pubertal girls particularly centered on nutritional aspect fed to them. Preparing them for sound health and accepting the challenges of health problems likely to be experienced in their future life, their diet is supplemented with traditional foods like, dates, garden cress, kharik, black raisins and pomegranate juice and fenugreek seeds etc. However, the study was undertaken with specific objectives to assess the effect of garden cress supplementation in improving the anemic condition of the pre-pubertal girls.

Objectives :

– To screen anemic condition of pre pubertal girls, to focus personal and socio-economic profile of pre-pubertal girls, to understand the nutritional status in terms of dietary pattern of anemic girls, to examine consequential effect attributed to anemic condition of the respondent girls and to assess the effect of supplementation in improving anemic

condition of the respondent girls.

■ RESEARCH METHODS

The present study was undertaken at Akola situated in eastern part of Vidharbha region in the state of Maharashtra. Sample of pre- pubertal girls (age 8 to 12 years) with anemic condition (below normal haemoglobin level) were selected. Amongst 560 girls universe, 240 pre-pubertal girls were selected with the help of “stratified proportionate random sampling”. These samples were initially placed into two categories based on their economic background. Pre-tested schedule was developed for collecting the information through personal interview. Data were collected with the help of schedule so finalized. In the present study an attempt was made to assess the effect of supplementation in improving anemic condition. The respondent girls before and after were subjected to appropriate type of supplementation. Their effective performance of role to a great extent depends upon their knowledge about the issue, type of attitude towards the same and adoption of recommended practices for the same. For assessing knowledge, attitude and adoption of practice to

Sr. No.	Nature of response on the statement	Score assigned
A.	For knowledge scale	
	High knowledge	3
	Medium knowledge	2
	Low knowledge	1
B.	For attitude scale	
	Strongly agree	3
	Agree	2
	Disagree	1
C.	For adoption scale	
	High adoption scale	3
	High adoption	2
	Medium adoption	1

Sr.No.	Category to respondents	Number of respondents	Treatment covered	Treatment ingredients	Quantity fed
1.	Control	60	-	-	-
2.	Low income group	60	Dietary supplementation	Garden cress Jiggery Coconut	15 g per day per head.
3.	Medium income group	60	Dietary supplementation	Garden cress Sugar Coconut Raisins	15 g per day per head.
4.	Medicinal supplementation	60	Medicinal supplementation	Dexorange capsules	2 tablets per day per head.

overcome anemic condition, different scales were developed.

To study the effect of dietary supplementation on pre-pubertal anemic girls, four different types of treatments were considered.

The girls in the control group were not provided any dietary supplementation and more so were left to their own choice for dietary consumption during the entire span of experiment. Supplementation of garden cress a tradition food jaggery, coconut 15 g/head were fed for 100 days to low income group respondents, garden cress, sugar, coconut, raisins (15g) burfi were fed to middle income groups for 100 days. 4thcategory (high income group) was treated with medicinal supplementation (Dexorange). Two tablets in single dose were given per day for 100 days with consultation of medical experts. The respondent girls were de-warmed 10 days before supplementation to avoid warm infestation.

In order to work out efficacy to these treatments, anthropometric measurement and Hb-level were recorded before and after treatment. Difference in terms of improvement in anthropometric measurement and haemoglobin was

indicative of anemic condition of the respondents under observation.

■ RESEARCH FINDINGS AND DISCUSSION

Study is systematically assessment of Hb level of pre-pubertal girls as a result of administering supplementation suitable to their economic conditions. Results emerged have been briefly summarized below.

Personal, socio- economic and psycho – situational profile :

Majority (77%) of the respondent girls belonged between nine to ten years and were studying in sixth standard, followed by fifth standard order who had second birth order. About 135 respondent girls came from nuclear type of family. Most of them participated in various type of activities voluntarily. 80 per cent of the respondent girls were maintaining friendly relationship with friend relatives and neighbours. 50 per cent respondents belonged to income group upto Rs. 10,000 / month, followed by those who reported their income in between Rs. 10,000 to 20,000/month and only 12 per cent reporting

their income above 30,000/month. Majority of the girls expressed their favourable attitude toward health and its importance in academic excellence, success, sports, games and attaining social status.

Anthropometric measurements :

Anthropometric measurement indicates health status, so it was measured and recorded which revealed that out of 240 respondents, 109 girls the average weight was found to be 25 kg, ht 127 cm-138 cm, chest circumference 18-22cm, arms circumference 173 cm and hip circumference 136 cm (Table 1).

Sr. No	Anthropometric profile category	Respondent reporting (n = 240)	
		Frequency	Per cent
A.	Weight		
	Up to 25 kg.	109	45.41
	26 to 32 kg.	97	40.41
	33 to 40 kg.	27	11.25
	Above 40 kg	07	2.91
B.	Height		
	Up to 126 cm.	47	19.58
	127 to 138 cm.	115	47.91
	139 to 150 cm.	64	26.66
C	Chest circumference		
	Up to 60 cm.	110	45.83
	61 to 68 cm.	95	39.58
	69 to 76 cm.	30	12.5
	Above 76 cm.	05	2.08
D	Arm circumference		
	Up to 17 cm.	58	24.16
	18 to 22 cm.	173	72.08
E	Hip circumference		
	Up to 64 cm.	61	25.41
	65 to 74 cm.	136	56.66
	75 to 84 cm.	35	14.58
	Above 84 cm.	08	3.33

Nutritional status :

Haemoglobin level to a great extent was influenced by dietary iron and vitamin C. It was necessary to examine the daily average iron intake and vitamin C by the respondent girls through their daily diet. It was revealed that the quantity of average daily iron intake for the girls belonging to control LIG, MEG and MSG were worked out to 12.386, 9.849, 14.386 and 11.386 mg, respectively. Corresponding figures for intake of vitamin C was found to be 26 – 32, 20, 61, 29.78 and 20.34,

respectively. Overall food and nutrient intake was found inadequate in all the respondent pre- pubertal girls.

Effect of supplementation :

Special emphasis was led on assessing the effect of supplementation on health, prominent parameter namely, haemoglobin level. Majority (69.16 %) of the respondent girls had their haemoglobin level in the range of 8 to 9.8 g/dl followed by those who had her haemoglobin level in between 10-11.8 g/dl. None of the girls had their haemoglobin level above 11.8 g/dl (Table 2).

Sr. No.	Hemoglobin level category	Respondent reporting (n = 240)	
		Frequency	Per cent
1.	Up to 7.8 g/dl.	04	1.66
2.	8 to 9.8 g/ dl	166	69.16
3.	10 to 11.8 g/ dl	70	29.16
4.	Above 11.8g/dl	-	-

Sr. No.	Health status category	Respondent reporting	
		Frequency	Per cent
1.	Control group		
	Best (above 23)	05	08.33
	Satisfactory (20-23)	39	65.00
2.	LIG		
	Best (above 23)	05	8.33
	Satisfactory (20- 23)	36	60.00
3.	MEG		
	Best (above 23)	21	35.00
	Satisfactory (20- 23)	33	55.00
4.	MSG		
	Best (above 23)	14	23.33
	Satisfactory (20- 23)	39	65.00
	Unsatisfactory (below 20)	07	11.66

Frequency distribution of the girl respondents indicated that 67.91 per cent of the girl respondents were placed into satisfactory category of health status followed by those (45) who were placed into unsatisfactory category of health status. Present study has been planned and directed to ascertain efficacy of various types of supplementation on Hb level.

For influencing weight, height, chest, arm and hip circumferences before and after supplementation for control LIG, MEC, MSG was given in (Table 4).

It is observed for results of Table 4 that there was positive effect of supplementation on height, weight, chest, arm and hip circumference. Hb level of the respondent girls estimated before and after intervention as indicator to evaluate the impact of iron supplementation. Hb level was found to be considerably increased in experimental groups. Regarding LIG, MEG, ESG, similar findings were observed by Devi and Uma (2005), Beininger, Lamounies *et al.* (2005) and Tiwari (2004).

It was essential to ascertain the effect of supplementation on different groups LIG, MEG, MSG, ANOVA which were considered as an appropriate therefore data were subjected to F test.

Results emerged clearly brought out significant difference between the groups as attributed to the effect of supplementation. Calculated value of "F" is 1257.417 which is greater than table value (3.03) at 5 per cent probability. After studying the difference in the treatments mean with respect to critical difference value (0.1117) which indicated

that MSG was found to be more effective and followed by MEG and LIG.

Conclusion :

Majority of mothers were not aware about maintaining haemoglobin level. In real sense they did not know what exactly Hb is? What are their levels, which are the locally available or traditional major food sources to fulfill their nutritional requirement. This necessitated organization of orientation for providing technical knowhow by the experts to the extent of their satisfaction. Mothers of the respondents suggested that girls need to be guided by experts in the schools frequently and there is a provision of supplementation instead of routine regular diet to the girls.

Haemoglobin level to a great extent influenced by dietary iron and order to improve anemic condition there should be careful to feed supplementation prepared suiting to their financial resources.

Table 4 : Effect of supplementation in influencing selected parameters of health of respondent girls

Sr. No.	Name of group	Weight (ave.) (kg)		Height (ave.) (cm)		Head circumference (ave.)	
		Before	After	Before	After	Before	After
1.	Control	25.61	26.61	133.31	135.13	50.85	52.24
2.	LIG	25.38	27.5	133.83	136.85	50.76	51.55
3.	MEG	28.8	29.73	136.33	139.91	51.08	52.36
4.	MSG	25.35	27.01	137.75	135.65	50.98	52.96

Sr.No.	Name of group	Chest circumference (ave.) (cm)		Arm circumference (ave.) (cm)		Hip circumference (ave.) (cm)	
		B	A	B	A	B	A
1.	Control	61.85	64.13	18.56.	19.15	68.01	71.1
2.	LIG	61.95	64.25	18.93	19.45	67.81	71.43
3.	MEG	63.46	66.3	18.76	19.83	72.21	75.41
4.	MSG	62.08	64.25	18.76	18.95	67.91	70.75

Sr.No.	Name of group	Haemoglobin level (ave.) (mg/dl.)	
		Before	After
1.	Control	9.38	9.68
2.	LIG	9.70	10.88
3.	MEG	9.18	11.56
4.	MSG	8.71	11.76

Table 5 : Difference attributed to supplementation treatments between groups under investigation

Sr. No.	Statistics	D.F	S.S	M.S.S	F. value
1.	Rows	3	320.734	106.91913	1257.471*
2.	Error	236	20.0658	8.5024	
3.	Total	239	340.7998		
Sr. No	Statistics	Control	LIG	MEG	MSG
1.	Treatment mean	0.1866	2.02	2.630	3.29
2.	S.E.	3.7644(M)	5.3236		
3.	C.D.	0.1117			
4.	C.V.	14.3522			

■ REFERENCES

Bahtussen, R., Nai, K.C. and Sharan, M. (2004). Iron fortification and iron supplementation are not cost effective intervention to reduce iron deficiency in four sub regions of the world. *J. Nutrition*, **134** (10): 2678-2684.

Sumati, R. Mudami, M.V. and Rajagopal: Fundamentals of food, nutrition and diet therapy- p. 193 – 194 Shubhgini, A. Joshi: *Nutrition & Deities* : p.-150 Manay, N.S; Shadaksharasway, M. *Foods, - facts & principles*; p.446.

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