

Effect of garden cress seeds and amla intervention on the haemoglobin status of non-pregnant women

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ABSTRACT

Iron deficiency and iron deficiency anemia in women of reproductive age can seriously affect their health. The study was conducted to assess the effect of garden cress seeds and Amla intervention on haemoglobin level of non pregnant women (18 – 25 years). Total 45 respondents were taken from G.D.M Girls hostel, Modinagar and divided into three group I, group II and group III. General profile, medical history, dietary habits, general awareness, physical activity, anthropometric measurement, biochemical analysis, clinical assessment, and dietary assessment with three day food recall and nutrient intake was done of all the respondents before intervention. 10g garden cress seeds were provided per day to experimental group I for 3 months which provided 10 mg iron per day, while 10 g garden cress seeds with 10g amla chutney were provided to experimental group II for 3 months. Anthropometry measurement, clinical analysis and biochemical assessment were done after intervention. The study concluded that inclusion of garden cress seeds alone and with vitamin C, which have high content of iron, on a daily basis effectively increased haemoglobin level in those respondents who have low initial haemoglobin level. While a little effect was also seen on anthropometric measurement and clinical assessment also.

KEY WORDS : Garden cress seed, Haemoglobin status, Intervention, Amla

How to cite this paper: Gupta, Chhavi and Singhal, Surbhi (2011). Effect of garden cress seeds and amla intervention on the haemoglobin status of non pregnant women (18-25 years). *Asian J. Home Sci.*, 6(2): 216-219.

Article chronicle: Received: 03.06.2011; **Revised:** 08.10.2011; **Accepted:** 15.11.2011

Micronutrient deficiencies takes a major toll on the health and wellbeing of our population. Among the several essential micronutrients that have severe damaging effects on physical, cognitive, socio-economic performance, anemia particularly due to iron deficiency ranks the most prevalent. The groups that are more vulnerable to iron deficiency and anemia are in the pregnant women, women of reproductive age and young children (Seshadri, 2009).

Micronutrient deficiency especially iron deficiency in young females of reproductive age can seriously affect their health. During this age, iron deficiency not only reduces work productivity but also leads to complications of pregnancy to the later years. (Acc.to NFHS III, 2008) 56 per cent women aged 15–44 years are suffering from anemia in India.

Garden cress seeds, known as *Halim* in Hindi are loaded with nutrition. It is an important source of iron, folic acid, calcium, vitamins C, E and A. It is a rich source of iron 'containing 100 mg iron/100g garden cress seeds. It is useful in leprosy, skin disease, dysentery, dyspepsia, eye diseases, leucorrhoea, scurvy, asthma, cough cold and

seminal weakness. Vitamin C greatly increases iron absorption. Amla is an excellent source of vitamin-C.

RESEARCH METHODS

Sample size and selection:

The study was conducted on representative group of 45 respondents (18-25 yrs), selected from G.D.M. Girls Hostel, Modinagar. Random sampling was used to select the sample.

Total 45 respondents were divided into 3 groups:

- 15 Respondents in experimental group I
- 15 Respondents in experimental group II and rest
- 15 Respondents in control group.

Tools of data collection:

For the present study, survey method was used for data collection, in which a self prepared questionnaire was given to respondents, containing the detailed information about their name, age, sex, type of activity, health status, dietary habits and eating pattern like-meals per day, skipping meal habits etc. Anthropometric measurement was also done in which height, weight and

BMI were measured before and after intervention of garden cress seeds and Amla chutney. Clinical assessment of all the 45 respondents was done like – constipation, pale skin, weakness and dizziness during menstruation etc. In addition, haemoglobin level in all 45 respondents was assessed by “cyanmethaemoglobin” method, before and after intervention. For dietary assessment, 24 hrs recall method was used. In this method, the subject was asked to recall all the drinks and foods consumed over the previous 24 hrs in 3 days according to household measures.

Intervention of garden cress seeds and Amla chutney:

As per the information obtained from non-pregnant women before intervention, it was revealed that majority of respondents were not taking enough iron in their diet as recommended by ICMR.

The 1st group of 15 respondents was given 10 mg iron/day. Group II was given 10 g garden cress seed with 10 g Amla chutney/day. The Amla chutney was made up with Amla and sugar in ratio 50:50. Thus, 10g Amla chutney provided 30 mg vitamin C/day. This intervention period was of 90 days. Nothing was provided to the group III (control group).

Statistical analysis:

Statistics used to analyze the responses were simple frequencies, percentages, t test, arithmetic mean, standard deviation and f-test. All the data were tested at $p < 0.05$ level of significance.

Graphical representation:

Graphical representation of frequency distribution assists in defining the shape of distribution graphically. Results were represented by bar graphs.

RESEARCH FINDINGS AND DISCUSSION

The present study was undertaken with the aim to

assess the role of garden cress seeds and Amla chutney in improving the haemoglobin level of non-pregnant women.

The results highlights that among the 45 respondents, 71.11 per cent were from 21-23 years of age group, 96 per cent were sedentary worker and 100 per cent of the respondents were from middle income group.

In concern to their medical history, 26-33 per cent of respondents had checked their Hb level before the study. About 13.33-26 per cent were taking nutrient supplement.

Most of the respondents (73.33%, 53.33% and 40% in group I, II, III respectively) not at all preferred exercise. Some respondents preferred exercise slightly or moderately.

Data from their dietary habits revealed that most of the respondents (66.66 to 73.33%) were vegetarian. 100 per cent respondents generally were taking 4 meals in a day. 73.33 per cent, 40 per cent and 73.33 per cent respondents in group I, II and III, respectively had habit of skipping meal because of disliking of food or lack of appetite as they had the habit of taking snacks or other items in between the meal timings. All the 100 per cent respondents consumed tea generally 2 times in a day.

Table 1 shows that intake of green leafy vegetables, other vegetables and milk and milk products was very low among the respondents. Nutrient intake when compared to RDA (ICMR, 1990) revealed that energy intake among respondents was 91.99 per cent, 91.49 per cent and 91.43 per cent of RDA in group I, II and III, respectively. Protein intake was 92.4 per cent, 94.12 per cent and 92.04 per cent of RDA among the respondents of group I, II, III, respectively. Fat consumption was significantly higher among the respondents. (210.5%, 215.8% and 215.0%) in group I, II, and III, respectively.

The mean carbohydrate intake was also low among the respondents. Potatoes, wheat flour, rice, sugar and cold drink were main source of CHO. Calcium intake

Table 1: Average daily food intake (g/day) of respondents			(n=45)
Food groups	Suggested intake (g)	Observed value (g)	Per cent adequacy (%)
Cereals	300	273.3	91.76
Pulses	60	50	83.33
Green leafy vegetables	100	6.6	6.6
Roots and tuber	100	110	110
Other vegetables	100	16.6	16.6
Fruits	100	100	100
Milk and milk products	500	156.6	31.3
Fats and oil	25	29	116
Sugar and jaggery	30	21.6	72

Table 2: Mean height, weight and BMI of respondents

Parameter	Std value	Group-I			Group-II			Group-III		
		Mean \pm SD		t-test	Mean \pm SD		t-test	Mean \pm SD		t-test
		Initial	Final		Initial	Final		Initial	Final	
Height (cm)	157*	156.33 \pm 5.13	156.4 \pm 5.04	0.33#	157.93 \pm 4.43	158.2 \pm 3.94	0.16#	155.33 \pm 5.40	155.33 \pm 5.40	0#
Weight (kg)	50*	52.0 \pm 7.73	53.4 \pm 7.83	1.87#	48.2 \pm 5.33	49.8 \pm 4.98	2.44\$	49.33 \pm 6.62	49.33 \pm 6.62	0#
BMI (kg/m ²)	22.5*	21.28 \pm 2.91	21.85 \pm 2.91	0.02#	19.13 \pm 1.77	20.18 \pm 1.84	0.02#	20.40 \pm 1.57	20.40 \pm 1.57	0#

* according to M.Swaminathan, 2001

insignificant at 0.05 level of significance

\$ Significant at 0.05 level of significance

was adequate to some what higher when compared to RDA, while they were not consuming milk, curd and cheese etc in adequate amount. Iron intake was very low among the respondents. Vitamin C intake was higher than the RDA among the respondent as they were taking orange, guava and lemon as seasonal fruits in adequate amount.

The result of Table 3 showed that the intervention made a minor increase in the mean height of respondents of both the experimental groups as all the respondents were mature in age. T-test values also were insignificant at 0.05 level of significance. Mean weight of respondents was significantly increased in both the experimental groups (from 52.06 to 53.4 in group I and from 48.2 to 49.8 in group II) as garden cress seeds have good fat

content (24.5g fat/ 100g), mean BMI of respondents was also increased but only in the experimental groups I and II.

Among the various signs and symptoms of iron deficiency, constipation, dark circles, headache, problem in seeing in dim light, feeling of tiredness after any light work and weakness during menstruation were most prevalent among the respondents. Table 4 intervention of garden cress seeds alone and with Amla chutney make a more favourable effect on constipation and feeling of tiredness after any light work. Garden cress seeds with Amla chutney made more effective results in comparison to garden cress seeds alone.

Haemoglobin level was significantly increased after intervention only in those respondents whose Hb level

Table 3: Distribution of respondents according to presence of signs and symptoms before and after study

Sign and symptoms	Category	Group-I		Group-II		Group-III	
		Number	%	Number	%	Number	%
Dental problem	Initial	1	6.66	3	20	2	13.33
	Final	1	6.66	2	13.33	2	13.33
Nausea/vomiting	Initial	2	13.33	1	6.66	1	6.66
	Final	2	13.33	1	6.66	1	6.66
Constipation	Initial	3	20	5	33.33	6	40
	Final	-	0	1	6.66	6	40
Dark circle	Initial	5	33.33	10	66.66	7	46.66
	Final	5	33.33	8	53.33	7	46.66
Headache	Initial	7	46.66	6	40	7	46.66
	Final	5	33.33	4	26.66	7	46.66
Problem in seeing in dim light	Initial	7	46.66	5	33.33	4	26.66
	Final	7	46.66	5	33.33	4	26.66
Feeling of tiredness	Initial	7	46.66	8	53.33	5	33.33
	Final	3	33.33	1	33.33	5	33.33
Pail nails of conjunctiva	Initial	2	13.33	1	6.66	1	6.66
	Final	1	6.66	-	-	1	6.66
Weakness a dizziness during menstruation	Initial	6	40	7	46.66	5	33.33
	Final	6	40	5	33.33	5	33.33

Category (WHO 1989)	Group-I		Group-II		Group-III	
	No. of respondents	%	No. of respondents	%	No. of respondents	%
Non anemic (<12g/dl)	8	53	7	47	9	60
Mildly anemic (10-11.9g/dl)	4	27	5	33.33	4	27
Moderately anemic (7-9.9 g/dl)	3	20	3	20	2	13
Severely anemic (<7g/dl)	0	0	0	0	0	0

Category (WHO, 1989)	Group-I			Group-II			Group- III		
	Mean \pm SD		t-test	Mean \pm SD		t-test	Mean \pm SD		t-test
	Initial	Final		Initial	Final		Initial	Final	
> 12/dl	12.97 \pm 0.42	12.99 \pm 0.42	0.78	12.87 \pm 0.47	12.94 \pm 0.51	0.72	1303 \pm 0.66	12.9 \pm 0.64	0.24
10-11.9 g/dl	11.5 \pm 0.42	13.0 \pm 0.28	0.42	11.53 \pm 0.30	13.03 \pm 0.30	0.04	11.65 \pm 0.21	11.65 \pm 0.21	0.0
7-9.9 g/dl	8.3 0.41	11.66 \pm 0.20	0.00	7.97 \pm 0.87	11.17 \pm 0.22	0.00	8.51 \pm 0.42	8.51 \pm 0.42	0.0
< 7g/dl	-	-	-	-	-	-	-	-	-

*indicates significance of value at P=0.05

was < 11.9 g/dl as the mean Hb level in group I increased from 11.5 to 13.0 and 8.3 to 11.66 g/dl and in group II it increased from 11.53 to 13.03 and from 7.97 to 11.17 g/dl (Table 4 and 5).

Conclusion:

On the basis of all the results, it was concluded that iron intake among all the respondents was considerably low as they were not including good sources of iron in their diet as- green leafy vegetables, meat and flesh foods and jaggery etc. Intervention of 10 g garden cress seeds alone (which provide 10mg iron/day) or with 10 g Amla chutney on daily basis for 3 months effectively increased the haemoglobin level in those respondents whose Hb level was < 11.9 g/dl while little or no effect was seen on Hb level of those respondents whose Hb level was =12.0 g/dl. In addition it also made a favourable effect on anthropometric measurement and clinical signs and symptoms of iron deficiency.

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REFERENCES

- Bamji, S.M.**, Rao, P.N. and Reddy, V. (2003). Text book of Human Nutrition, Oxford and IBH Publishing Co., Pvt. Ltd., New Delhi.
- Insel, Paul**, Turner, Elaine, R., Ross, Don ((2003). Discovering Nutrition, 399 – 404, Jones and Bartlett Publishers, Canada
- Joshi, A.** (2002). Shubhangini, nutrition and dietetics II edition Tata Mcgraw hill publishing company limited, New Delhi. pp. 107-110.
- NFHS III.** (2008). National family health survey of India 2006-07, International Institute of Population Sciences, Bombay.
- Robinson, H.** (1986). Corinne et al; Normal and Therapeutic Nutrition 17th Ed. 1986: 121-26, 172-77; Macmillan publishing Co., New York.
- Seshadri, S.** (2005). The persistent problem of iron deficiency anemia and its consequences; A life cycle approach is critical for its control. *Proc. Nut. Soc.*, India : 19-36.
- World Health Organization** (1968). Technical report series no 405, Nutritional anemias, Geneva.

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