An interventional study to identify the anaemic adolescents girls and to evaluate the effectiveness of iron combo to improve anaemic condition among adolescents girl's at selected community area of Indore city

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Abstract

INTRODUCTION- Girls are more likely to get anaemia than boys because of the additional iron their blood loses during menstruation. It may have an impact on a teen girl's growth and academic performance. Studies have shown that adolescents with anaemia have impaired verbal learning and memory. As well as lower standardised math scores. There is evidence that correcting the anaemia may improve learning. Even before anaemia might develop, iron deficiency can cause shortened attention span, alertness, and learning in adolescents.

OBJECTIVES- To identify the anaemic adolescents girl's before and after given iron combo in selected community area.

HYPOTHESES-There is significant difference between the mean pre and post assessment Haemoglobin level among adolescent girls in selected community area.

MATERIAL AND METHODS- A pre experimental study was conducted at Bicholi hapsi village, Indore Madhya Pradesh India. The population for this study was anaemic adolescents girls. The sample size was for the study is 60. Convenient sampling technique was used to select samples.

Adolescent girls who are between the age group of 10 - 19, haemoglobin level less than 11.9 gm/dl, enrolled in registers in government schools of Bicholi Hapsi Indore. The subjects received oral nutritional supplements (Iron Combo- 150 gm) once a daily in the morning for 21 days. Bodyweight and haemoglobin levels were assessed before and at the end of 21 days of intervention.

RESULT- After 21 days of daily supplementation of Iron Combo (150 gm), researchers observed that the analysis of the demographic data in the study post assessment 10.36 SD±1.13is higher than mean pre assessment 8.75 SD±1.35and calculated t value t = 18.72* (df = 59) is found to be significant at the level of 0.05. Hence research hypothesis H_1 is accepted. I.e. there is significant difference between the mean pre and post assessment Haemoglobin level among adolescent girls in selected community area and null hypothesis is rejected.

CONCLUSION- The results of this study demonstrated the usefulness of the iron combo in enhancing the haemoglobin status of adolescent girls. Beetroot, jiggery and amla worked better together than any other natural food supplement to raise the haemoglobin levels of teenage girls. The benefit of this preparation is that, unlike parenteral and oral iron treatments, it has no notable side effects. Additionally, it can be applied as a preventative measure to deal with iron deficiency in populations at risk. To assess the effectiveness of this dietary supplement, similar studies with longer follow-up periods in school-aged children are required.

KEY WORDS-Iron combo, anaemia, adolescents girls, Effectiveness.

INTRODUCTION

Anemia is one of the most important public health problems that persist worldwide, not only among pregnant women, infants and young children but also among adolescents of developing countries. The term nutritional anemia comprises all pathological condition in which the blood haemoglobin concentration drops to an abnormally low level due to a deficiency in one or several nutrients. The main nutrients involved in the synthesis of haemoglobin are iron, folic acid and Vit. B12but in public health terms iron deficiency is the most common nutritional disorder in the world affecting nearly 2 billion people with an adverse impact on health, education and productivity of entire nation.

Anaemia is a condition that develops when your blood lacks enough healthy red blood cells or haemoglobin. Haemoglobin is a main part of red blood cells and binds oxygen. If you have too few or abnormal red blood cells, or your haemoglobin is abnormal or low the cells in your body will not get enough oxygen.

Adolescence is a coming of age as children grow into young adults. These teen years are a period of intense

growth, not only physically, but also mentally and socially. During this time, 20% of final adult height and 50% of adult weight are attained. According to WHO estimates, India is one of the countries in the world that has highest prevalence of anaemia. WHO estimates that 27 percent of adolescents in developing countries are anaemic; the Inter National Centre of Research for Women (ICRW) studies documented high rates in India (55 percent), Nepal (42 percent), Cameroon (32 percent) and Guatemala (48 percent). Anaemia prevalence in young adolescent girls continues to remain over 70% in most parts of India and Asia despite a policy being in place and a program that has been initiated for a long time.

NEED OF THE STUDY

Anaemia is one of the most universally prevalent diseases in the world today. Iron deficiency anaemia is the most common micronutrient deficiency. WHO studies show higher rate in developing countries .The iron deficiency anaemia is common 52 % of pregnant women and about 35-40% of non-pregnant women. In globally, a cross-sectional method was used to study a group of 100 high school students in Kocaeli, Turkey, aged 14 to 19years, identified among 65 high school students. Students from 5 high schools were selected using a random sampling method for detecting the haemoglobin level. Nutrition ball was given to adolescents with anaemia for 30 days. Out of 65 participating students (mean age, 14.72+/-0.71 y), anaemia (haemoglobin<12 g/dl for girls and <13 g/dl for boys) was detected in 17/36 girls (49.7%) and 6/164 boys (3.6%). Anaemia was detected in 20/23 (86.9%) of anaemic children [15/17 (88.2%) girls and 4/6 (66.6%) boys]. The prevalence of adolescent anaemia in Kocaeli is almost equal to that in developed countries.

The experimental study was conduct in Mohali Punjab of 100 adolescent girls. The result shows that majority 58(58%) adolescent girls had inadequate knowledge, 40 (40%) had moderate knowledge and 02 (2%) had adequate knowledge in pre-test before administering structured teaching program. After getting structured teaching program, 15 (15%) of adolescent girls had moderate knowledge and 85 (85%) of adolescent girls had reported adequate knowledge. It concludes that gain in knowledge after teaching program and there is significant association between level of knowledge and demographic variables.

A cross-sectional study was carried out in a few urban slums in the city of Bhopal, Madhya Pradesh. According to the city profile (Bhopal Municipal Corporation, 2012); there are 380 slums in Bhopal. One slum was chosen at random. According to the 2011 census, the chosen slum has 12,000 residents. In a chosen urban slum, 3 of the 8 Anganwadis were chosen at random. All females between the ages of 10 and 19 who registered for an Anganwadi programme and gave their agreement for haemoglobin measurement met the inclusion criteria. Of the girls, 57.65% had anaemia. Of these, 20.4% had severe anaemia, 34.7% had mild anaemia, and 44.9% had moderate anaemia. 29.4% were aware that poor eating can lead to anaemia. Followed by a lack of vitamins (25.8%) and a lack of iron (22.3%). 29.4% of females were unaware of the causes of anaemia. Likewise, 51.7% and 29.4% of in a similar ve in, 29.4% and 51.7% of survey participants said they were unaware of any anaemia symptoms or treatments. Anaemia was a common condition among all research participants. The study participants' knowledge of anaemia's signs, causes, and treatments was quite limited.

PROBLEM STATEMENT

An interventional study to identify the anaemic adolescent's girls and to evaluate the effectiveness of iron combo to improve anaemic condition among adolescents girl's at selected community area of Indore city".

OBJECTIVES OF THE STUDY

1. To identify the anaemic adolescents girl's before and after given iron combo in selected community area.
2. To evaluate the effectiveness of iron combo to improve anaemic condition among adolescents girl's in selected community area.
3. To find out the significant association between the pre assessment haemoglobin level among adolescent girls with their selected demographic variables.

HYPOTHESES

H_0: There is no significant difference between the mean pre and post assessment Haemoglobin level among adolescent girls in selected community area.

H1 There will be a significant difference between the mean pre and post assessment Haemoglobin level among adolescent girls in selected community area.

ASSUMPTIONS

Adolescent girls are prone to developing anaemia due to menstruation, insufficient iron in the diet, and poor absorption of iron in the body. Dietary intake of an

iron supplement in the form of an iron combo will improve haemoglobin levels among adolescent girls.

REVIEW OF LITERATURE

Ms. Deepti, Dr. Priyanka Choudhary etal 2021experimental study was conduct in Mohali Punjab of 100 adolescent girls. The result shows that majority 58(58%) adolescent girls had inadequate knowledge, 40 (40%) had moderate knowledge and 02 (2%) had adequate knowledge in pre-test before administering structured teaching program. After getting structured teaching program, 15 (15%) of adolescent girls had moderate knowledge and 85 (85%) of adolescent girls had reported adequate knowledge. It is significantly shows that there is association between knowledgelevels of adolescent girls regarding prevention and prevalence of anemia and demographic variables. It conclude that gain in knowledge after teaching program and there is significant association between level of knowledge and demographic variables.

Veena Melwani, Manju Dubey etal 2018cross sectional study conducted in selected urban slum of Bhopal city. There are 380 slums in Bhopal as per city profile, Bhopal Municipal Corporation, 2012.4 one of the slum was selected randomly. The population of selected slum is 12,000(census 2011). 3 out of 8 Anganwadi's of selected urban slum were selected randomly. Inclusion criteria were all the girls aged 10-19 years registered in Anganwadi and giving consent for haemoglobin estimation. Anaemia was present in 57.65% girls. Out of which 34.7% had mild, 44.9% had moderate and 20.4% had severe anaemia. 29.4% knew improper diet as a cause of anaemia followed by Vitamin deficiency (25.8%) and iron deficiency (22.3%). 29.4% girls did not know any cause of anaemia. Similarly 29.4% and 51.7% of study participants did not know of any symptoms and treatment of anaemia respectively. The overall prevalence of anaemia was high among study participants. Knowledge regarding anaemia, its symptoms, causes and treatment was very poor among study participants.

Rekha Kumari, Raushan Kumar Bharti etal 2017 cross-sectional study was done in the biochemistry clinical laboratory of Indira Gandhi Institute of Medical Sciences, Patna, Bihar India for a period of six months (April 2015-October 2015). Haemoglobin estimation was done by Sahli's method. Total iron and Total Iron Binding Capacity (TIBC) estimation was done by Ferrozine method on fully automated chemistry analyzer Olympus AU 400 with the reagent kit available in the market. Ferritin estimation was done by chemiluminesence immunoassay method, this study result shows that Out of 200 girls, 50% adolescent girls were found to be anemic. Of the total, 43.3% were mildly, 3.3% were moderately and 3.3% were severely affected by anaemia.

MATERIAL AND METHODS

Study Design and approach

A pre experimental study was conducted, to identify the anaemic adolescents girls and to evaluate the effectiveness of iron combo to improve anaemic condition among adolescents girls. In this study quantitative approach was used.

Study Area and Population and criteria

The study was conducted at Bicholi hapsi village, Indore. Madhya Pradesh India. The population for this study was anaemic adolescent's girls.

Inclusion criteria-

- Adolescents girls who were willing to participate in the study,
- Adolescent's girls with anemia (Hemoglobin less than 11.9mg/ dl) during the time of data collection.

Exclusion criteria-

- Adolescent's girls who were not available at the time of data collection.
- Adolescent's girls having any other blood disorders.
- Adolescents girls who werenot willing to participate in the study.

Sample Size and Sampling Procedure

The sample size was for the study is 60. Probability simple random sampling technique was used to select samples.

Two types of variables were used in this study Independent variable Iron Combo,

Dependent Variable is Improve anaemic condition

RESULT-After 21 days of daily supplementation of Iron Combo (150gm), researchers observed that the analysis of the demographic data in the study post assessment 10.36 SD±1.13is higher than mean pre assessment 8.75 SD±1.35and calculated t value t = 18.72***** (df = 59) is found to be significant at the level of 0.05. Hence research hypothesis H_1 is accepted. I.e. there is significant difference between the mean pre and post assessment Haemoglobin level among adolescent girls in selected community area and null hypothesis is rejected.

S. No.	DEMOGRAPHIC DATA			FREQUENCY(F)	PERCENTAGE (%)
1	Age	A	10-12	0	0%
		B	13-15	17	26.66%
		C	16-17	23	38.33%
		D	18-19	20	33.33%
2	Family Income	A	Below 4000/- Rs.	0	0%
		B	4001-8000/- Rs.	11	18.33%
		C	8001-12000/- Rs.	27	45%
		D	Above 12001/- Rs.	22	36.66%
3	Education Status	A	6-7 Class	0	0%
		B	8-9 Class	18	30%
		C	10-11 Class	30	50%
		D	12 and above	12	20%
4	Parents Education	A	Illiterate	9	15%
		B	School Education	34	56.66%
		C	Diploma / Under Graduate	13	21.66%
		D	Post Graduate	4	6.66%
5	Religion	A	Hindu	47	78.33%
		B	Christian	7	11.66%
		C	Muslims	6	10%
		D	Others	0	0%
6	Type of Family	A	Nuclear Family	19	31.66
		B	Joint Family	33	55%
		C	Extended Family	2	3.33
		D	Single Parents Family	6	10%
7	Food Pattern	A	Vegetarian	47	78.33%
		B	Non-vegetarian	13	21.66%
8	Duration of Menstrual Cycle	A	2-3 days	19	31.66%
		B	4-5 days	25	41.66%
		C	6-7 days	13	21.66%
		D	Above 7 days	3	5%
9	Source of Information	A	Friends	11	18.33%
		B	Family Member	15	25%
		C	Mass Media	22	36.66%
		D	None of Above	12	20%
10	Previous Knowledge on Anaemia	A	Yes	48	80%
		B	No	12	20%

Table- Comparison between Mean, SD, Mean Difference and 't' Value of Pre assessment and Post assessment haemoglobin level (N=60)

Haemoglobin level	Mean	S. D.	D. F.	t-value	Significance
Pre assessment haemoglobin level	8.75	1.35	59	18.72	P<0.05
Post assessment of haemoglobin level	10.36	1.13			

The table result show that mean and SD of pre and Post assessment haemoglobin level were compared and 't' test was applied. It can be clearly seen that 't' value was 18.72 and p value was 0.05which clearly show that intervention (iron combo) was very effective in increasing the Haemoglobin level of adolescents girls.

Table :-Distribution of adolescent girls according to severity of anaemia (N=60)

S. No.	Haemoglobin level	Pre assessment of haemoglobin level		Post assessment of haemoglobin level	
		No.	%	No.	%
1.	Mild anemia above (10 gm/dl -11.9 gm/dl)	10	16.66%	38	63.33%
2.	Moderate anemia (8gm/dl 10gm/dl)	29	48.33%	19	31.66%
3.	Severe anemia (6.5gm/dl -8gm/dl)	21	35%	3	5%
	Total	60	100.0	60	100%

This table result show that score were graded in three categories – Severe anaemia (6.5gm/dl -8gm/dl), Moderate anaemia (8gm/dl 10gm/dl), Mild anaemia above (10 gm/dl -11.9 gm/dl).

The Pre assessment haemoglobin level of sample show that majority 29(48.33%) in Moderate range, follow by 21(35%) sample that had a Moderate and 10 (16.66%) sample had a Mild range.

After the intervention (iron combo) was given to the adolescents girls result show that 38(63.33%) sample had Mild19 (31.66%) Moderate score, 3(5%) were in Severe anaemia score.

Table:- Association of Demographic Variables with Pre assessment of haemoglobin level

S. No.	DEMOGRAPHIC DATA			Mild anaemia	Moderate anaemia	Severe anaemia	D.F.	P Value	X^2 VALUE
1	Age	A	10-12	0	0	0	4	0.05	3.52 (NS)
		B	13-15	3	11	3			
		C	16-17	4	9	10			
		D	18-19	3	9	8			
2	Family Income	A	Below 4000/- Rs.	0	0	0	4	0.05	14.1 (S)
		B	4001-8000/- Rs.	1	8	2			
		C	8001-12000/- Rs.	6	16	5			
		D	Above 12001/- Rs.	3	5	4			
3	Education Status	A	6-7 Class	0	0	0	4	0.05	7.46 (NS)
		B	8-9 Class	2	11	5			
		C	10-11 Class	8	10	12			
		D	12 and above	0	8	4			
4	Parents Education	A	Illiterate	1	5	3	6	0.05	7.65 (NS)
		B	School Education	3	17	14			
		C	Diploma / Under Graduate	4	5	4			
		D	Post Graduate	2	2	0			
5	Religion	A	Hindu	8	19	20	4	0.05	6.65 (NS)
		B	Christian	1	5	1			
		C	Muslims	1	5	0			
		D	Others	0	0	0			
6	Type of Family	A	Nuclear Family	3	9	7	6	0.05	2.29 (NS)
		B	Joint Family	6	15	12			
		C	Extended Family	0	2	0			
		D	Single Parents Family	1	3	2			
7	Food Pattern	A	Vegetarian	9	24	14	2	0.05	2.82 (NS)
		B	Non-vegetarian	1	5	7			
8	Duration of Menstrual Cycle	A	2-3 days	5	8	6	6	0.05	8.36 (NS)
		B	4-5 days	5	14	6			
		C	6-7 days	0	5	8			
		D	Above 7 days	0	2	1			
9	Source of Information	A	Friends	3	6	2	6	0.05	8.64 (NS)
		B	Family Member	3	8	4			
		C	Mass Media	3	7	12			
		D	None of Above	1	8	3			
10	Previous Knowledge on Anaemia	A	Yes	7	25	16	2	0.05	1.51 (NS)
		B	No	3	4	5			

CONCLUSION

The outcome of this study proved the effective role of the iron combo in improving the haemoglobin status among adolescents' girls. Combination of beetroot, jaggery and amla proved to be a better natural food supplement to improve haemoglobin level among adolescents' girls. The advantage of this preparation is that it does not have any significant adverse effects as observed with oral and parenteral iron preparations. It can also be used as a prophylactic strategy to combat iron deficiency in vulnerable

population. Similar studies in school going children with longer follow-up time, to evaluate the efficacy of this nutritional supplement is necessary.

RECOMMENDATION

On the basis of findings of the study the following recommendations were made.

- A similar study can be replicated on a larger sample.
- An experimental study can be under taken with control group.

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