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Impact of Holistic Nutrition Education on Iron Deficiency Anemia Eradication in Adult Girl Students

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ABSTRACT

Iron deficiency anemia (IDA) is the commonest nutritional anemia (70.00%) in adult girls in India. These girls are future mothers and IDA has adverse obstetric impact, so their IDA is a major cause of concern. The study was aimed at assessing impact of Holistic Nutrition Education (HNE) alone, Iron supplementation (IS) alone and HNE + IS combined in IDA eradication. 120 Adult Girl Students (AGS) with hemoglobin (Hb) < 11 gm% were divided in to 03 groups of 40 each. Group I received HNE only, Group II had IS only and Group III received HNE + IS; over a period of 06 months. Hb reassessed at 09 and 15 months. HNE helped AGS achieve good level of nutritional characteristics namely Dietary Practices (DP), Nutritional Knowledge (NK), IDA Knowledge (IDAK) & Personal Hygiene (PH) in 66.5%, 82.5%, 75.0% & 87.5% respectively resulting in 27.5% & 42.5% AGS attaining Hb > 11 gm% at 9 & 15 months respectively. In group II, only IS resulted in AGS achieving good level of DP, NK, IDAK & PH in 12.5%, 2.5%, 2.5% & 20% respectively resulting in IDA eradication in 10.0% & 0.00% at 9 & 15 months stage respectively. HNE + IS, in group III helped AGS achieve good levels of DP, NK, IDAK & PH in 75.0%, 87.5%, 80.0% & 92.5% respectively leading to Hb > 11 gm% in 65.0% & 82.5% at 9 & 15 months stage respectively. HNE + IS resulted in significant improvement in nutritional characteristics linked to IDA, thereby achieving better IDA eradication, both short & long term, when compared to HNE alone which in turn eradicated IDA better than IS alone.

KEYWORDS : IDA eradication, Nutritional characteristics, holistic nutrition education, Iron supplementation.

INTRODUCTION:

Iron Deficiency Anemia (IDA) is the commonest nutritional anemia in adult girls in India. About 70% adult girls are anemic. These girls are on the threshold of marriage and are consequently future mothers. IDA has adverse obstetric impact. Various physiological and socio-economical factors are responsible for IDA in adult girls. Anemia in these marriageable girls is one of the most important preventable factor, directly or indirectly contributing to maternal morbidity and mortality as well as low birth weight babies.

Babies are the next generation of India and their mothers are the source of the next generation. Prevention of nutritional anemia like, IDA in marriageable adult girls is beneficial for themselves, their families, their babies and society.

Girls in the age group 20-25 years, if educated properly, are mature enough to understand IDA, its potential adverse effect on their health, as well as their future maternal health. They are likely to get naturally motivated by proper nutritional education to overcome IDA and prevent its recurrence. The study was aimed at assessing the impact of Holistic Nutrition Education (HNE) alone, Iron Supplementation (IS) alone and HNE + IS combined together, in IDA eradication in Adult (20-25 years) Girl Students (AGS) in Akola city.

OBJECTIVES:

The specific objectives of the study were as under:

1. To identify the respondent group for the research work,
2. To know the nutritional characteristics of the respondents,
3. To develop an appropriate educational package related to information regarding nutrition and IDA,
4. To implement different methods of correction of IDA in the study groups among the respondents,
5. To assess the different methods so implemented, in order to know the most effective method of IDA eradication.

METHODOLOGY:

The main centre for the research work was the Home Science Department of Smt. R.D.G. College, Akola. The work involved some of the college students in Akola city. The researcher developed a Nutritional Education Programme for IDA, which was used for the research work. The programme imparted education regarding nutrition and IDA to the respondents. It was used as a teaching device by the researcher.

The sample was comprised of girls students within the age group of 20-25 years. They belonged to different colleges in Akola city. The Hemoglobin (Hb) level of the girls in the sample was less than 11g % at the initiation of the study. The size of the sample was 150 girl students. From a larger group of 150 students, 30 students dropped out, hence the final sample size was 120 students.

Respondents were divided into three groups of 40 each and were labeled as Group-I, Group-II and Group-III as under:

Group-I: Respondents received nutritional education through NEPack for IDA (n1=40).

Group-II: Respondents received Iron supplementation (n2=40).

Group-III: Respondents received the nutritional education through NEPack for IDA as well as Iron supplementation. (n3=40).

Interview schedule is an important tool for collection of data. Due care therefore, was exercised in developing the pertinent schedule.

Worm infestation is very common in India and there is no simple confirmatory test for it and hence, it was decided to carry out de-worming in all the 120 respondents. Iron supplementation was done for Group-II and Group-III respondents using capsule dexorange with a dose of one capsule twice a day with meals. Supplementation was done for a period of six months. Reassessment of hemoglobin was done at 9 months' and 15 months' stage.

The nutrition education programme was prepared after giving due consideration to the nutritional characteristic assessment including dietary practices, nutritional knowledge, IDA knowledge and personal hygiene. Nutrition education was implemented at weekly intervals for a period of six months. The students (Group-I and Group-III) were educated through lectures, posters, modules, flip charts, Power Point presentation etc.

The researcher implemented 'the before and after' research design.

RESULTS AND DISCUSSION:

The study involved 120 mild IDA students with no history of menorrhegia and included -

- Pre-nutrition education (Pre-NE) and Post-nutrition education (Post-NE) assessments of concerned parameters. (Group-I).
- Pre- Iron supplementation (Pre-IS) and Post Iron supplementation (Post-IS) assessment of concerned parameters (Group-II).
- Pre-NE + IS and Post-NE + IS assessment of concerned parameters (Group-III).

about nutritional characteristics of the respondents was necessary and helpful for planning and preparing appropriate nutritional pro-

gramme.

Table-1: Nutritional Characteristic Level of the Respondents (n=120):

Nutritional Characteristics	Levels					
	Good		Medium		Poor	
	No.	%	No.	%	No.	%
Dietary Practices	08	6.67	72	60.00	40	33.33
Nutritional Knowledge	02	1.67	26	21.67	92	76.67
IDA Knowledge	00	0.00	12	10.00	108	90.00
Personal Hygiene	22	18.33	25	20.83	73	60.83

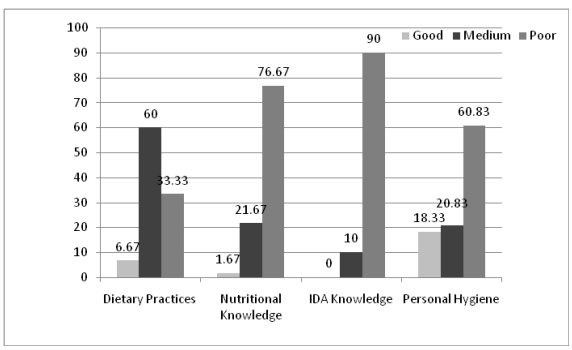


Fig.-2. Nutritional Characteristic Level of the Respondents (in %)

Majority respondents 60.00% had medium level of dietary practices. As many as 33.33% had poor level of dietary practices. Nutritional knowledge was poor in 76.67% and only 1.67% had good nutritional knowledge level. IDA knowledge was poor in 90.00% respondents. Personal hygiene was good, medium and poor in 18.33%, 20.83% and 60.83% respondents respectively.

Further assessments during the study were done on group wise basis.

Group-I: Respondents received nutritional education through NEPack for IDA (n1=40).
Group-II: Respondents received Iron supplementation (n2=40).
Group-III: Respondents received the nutritional education through NEPack for IDA as well as Iron supplementation. (n3=40).
Pre-NE and Post-NE assessment in Group-I: Group-I (n1=40) was given only nutrition education:

Table-2: Pre-NE and Post-NE assessment in Group-I (n1=40) :

Nutritional Characteristics	Levels											
	Good				Medium				Poor			
	Pre		Post		Pre		Post		Pre		Post	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Dietary Practices	03	7.5	27	66.5	24	60.0	12	30.0	13	32.5	01	2.5
Nutritional Knowledge	01	2.5	33	82.5	09	22.5	07	17.5	30	75.0	00	0.0
IDA Knowledge	00	0.0	30	75.0	04	10.0	08	20.0	36	90.0	02	5.0
Personal Hygiene	07	17.5	35	87.5	08	20.0	02	5.0	25	62.5	03	7.5

Good, medium and poor levels of dietary practices (DP) of respondents showed a shift; from 7.5% to 66.5%, from 60% to 30% and from 32.5% to 2.5% respectively. This indicates beneficial effects of nutritional education.

Good nutritional knowledge (NK) level was only 2.5% at pre-NE stage, which improved to 82.5% at post-NE stage. 75% respondents had poor NK level at pre NE stage, while at post NE stage no respondents (0.00%) remained at poor NK level. Enhancement of nutritional knowledge due to nutritional education was significant.

No respondent 0.00 % had good IDA knowledge level and 90 % had poor IDA knowledge level at pre NE stage. Nutrition education enabled 75% respondents and 20% respondents to achieve good and medium knowledge level respectively and only 5% remained at poor IDA knowledge level.

Good, medium and poor personal hygiene (PH) levels improved from 17.5% to 87.5%, from 20% to 5% and 62.5% to 7.5% at pre NE and Post NE stage respectively indicating positive effect of nutritional education.

Pre-IS and Post-IS assessment in Group-II:
Group-II (n2=40) was given Iron supplementation.

Table -3: Pre-IS and Post-IS assessment in Group-II (n2=40):

Nutritional Characteristics	Levels											
	Good				Medium				Poor			
	Pre		Post		Pre		Post		Pre		Post	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Dietary Practices	04	10.0	05	12.5	25	62.5	24	60.0	11	27.5	11	27.5
Nutritional Knowledge	01	2.5	01	2.5	10	25.0	10	25.0	29	72.5	29	72.5
IDA Knowledge	00	0.0	01	2.5	03	7.5	05	12.5	37	92.5	34	85.0
Personal Hygiene	06	15.0	0	20.0	11	27.5	12	30.0	23	57.5	20	50.0

In group-II, the dietary practices were good, medium and poor level in 10%, 62.5% and 27.5% at pre IS and 12.5%, 60% and 27.5% at Post IS stage, indicating negligible effect of iron supplementation on dietary practices of the respondents. Similarly, other parameters like NK,IDA Knowledge and PH of the respondents revealed insignificant and minor effects of iron supplementation to the respondents in Group-II.

Pre-NE + IS and Post-NE + IS in Group-III
Group-III (n3=40) was given nutrition education as well as Iron supplementation.

Table-4: Pre-NE + IS and Post-NE + IS in Group-III (n3=40):

Nutritional Characteristics	Levels											
	Good				Medium				Poor			
	Pre		Post		Pre		Post		Pre		Post	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Dietary Practices	02	5.0	30	75.0	25	62.5	09	22.5	13	32.5	01	2.5
Nutritional Knowledge	02	5.0	35	87.5	07	17.5	05	12.5	31	77.5	00	0.0
IDA Knowledge	00	0.0	32	80.0	04	10.0	07	17.5	36	90.0	01	2.5
Personal Hygiene	06	15.0	37	92.5	10	25.0	02	5.0	24	60.0	01	2.5

In group-III, respondents were imparted nutrition education (NE) as well as given iron supplementation (IS). Dietary practices, were at good, medium and poor levels in 5%, 62.5% and 32.5% respectively at pre-NE + IS stage; which improved to 75%, 22.50% and 2.50% respectively at post NE + IS stage. This indicates positive impact of combination of NE and IS on the dietary practices of the respondents in Group-III.

Nutritional knowledge of the respondents improved from 5% to 87.50 % for good NK level, from pre NE + IS stage to post NE +IS stage. Poor NK level which was very high at 77.5% at Pre NE + IS stage dropped to

0.00% at post NE +IS stage, indicating significant effect of NE + IS stage.

IDA knowledge for good, medium and poor levels changed from0.0% to 80.%; 10.0% to 17.5% and 90.0% to 2.50% respectively from pre NE + IS stage to post NE + IS stage.

Personal hygiene of the respondents changed from 15.0% to 92.5%, 25.0% to 5.0% and 60.0% to 2.5% at good, medium and poor levels respectively.

After assessing nutritional characteristics of the respondents in 3 different groups i.e. Group-I, Group-II and Group-III; it was necessary to assess the effects on the IDA of the respondents by means of hemoglobin levels.

Hemoglobin Levels:
Analysis of hemoglobin levels of the respondents in the 3 different groups done at initial stage, at 9 months' and at 15 months' stage was done for assessing impact on IDA in the 3 different groups.

Hemoglobin assessment at 09 months' stage – Pre and Post Study.
Hb level was reassessed at 09 months' period.

Table: 5: Hemoglobin assessment at 09 months' stage – Pre and Post Study.

Hb level gm% at 09 months	IDA STATUS											
	Pre						Post					
	Group-I		Group-II		Group-II		Group-I		Group-II		Group-II	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
08 to < 09	22	55.0	24	60.0	24	60.0	02	5.0	15	37.5	00	00.0
09 to < 10	15	37.5	12	30.0	13	32.5	15	37.5	13	32.5	02	5.0
10 to < 11	03	7.5	04	10.0	03	07.5	12	30.0	08	20.0	12	30.0
≥ to 11	00	0.0	00	0.0	00	00.0	11	27.5	04	10.0	26	65.0

Table-5 reveals that Hb level 8 to < 9 g%, for Group-I, Group-II and Group-III changed from 55% to 5%, 60% to 37.5% and 60% to 0.0% respectively, from pre study to post study stage. Hb level 9 to ≤ 10 g% for Group-I, Group-II and Group-III showed a shift from 37.5% to 37.5%, 30% to 32.5% and 32.5% to 5.5% respectively from pre study to post study stage. Hb level 10 to < 11g% for Group-I, Group-II and Group-III changed from 7.5% to 30 %; 10% to 20% and 7.5% to 30% respectively from pre study to post study stage. Hb level ≥ 11g%, indicating eradication of IDA was found in 27.5% Group-I respondents, 10% Group-II respondents and 65% Group-III respondents, indicating positive impact.

Hemoglobin assessment at 15 months' stage – Pre and Post Study.
Hb level was reassessed at 15 months' period.

Table-6: Hemoglobin assessment at 15 months' stage – Pre and Post Study.

Hb level gm% at 15 months	IDA STATUS											
	Pre						Post					
	Group-I		Group-II		Group-II		Group-I		Group-II		Group-II	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
08 to < 09	22	55.0	24	60.0	24	60.0	01	2.5	20	50.0	00	00.0
09 to < 10	15	37.5	12	30.0	13	32.5	12	30.0	15	37.5	01	02.5
10 to < 11	03	7.5	04	10.0	03	07.5	10	25.0	05	12.5	06	15.0
≥ to 11	00	0.0	00	00.0	00	00.0	17	42.5	00	00.0	33	02.5

Table: 6 revealed that at 15 months' period; Hb level of 8 to < 9g% in Group-I, Group-II and Group-III showed as shift from 55.0% to 2.5%, 60% to 50% and 60% to 0.0% respectively from pre-study to post study stage.

Hb level of 9 to < 10g% in Group-I, Group-II and Group-III changed from 37.5% to 30%, 30% to 37.5% and 32.5% to 2.5% respectively from pre-study to post study stage.

Hb level of 10 to <11g% in Group-I, Group-II and Group-III shifted from 7.5% to 25.0%, 10% to 12.5% and 7.5% to 15 percent respectively from pre study to post study stage.

Hb level ≥ 11g%, indicating eradication of IDA was found in 42.5% in Group-I, 0.0% in Group-II and 82.5% in Group-III implying positive impact.

CONCLUSIONS:
- Majority of the girls have poor levels of dietary practices, nutritional knowledge, IDA knowledge and personal hygiene which are very important nutritional characteristics linked with IDA.
- Nutrition education by itself enables adult girl students to improve nutritional characteristics level significantly.
- Iron supplementation without nutrition education has marginal and insignificant effect on nutritional characteristics of the girls.
- Nutrition education along with Iron supplementation results in marked improvement in nutritional characteristics, linked with IDA of the girls.
- Iron supplementation alone brings about some short term improvement in IDA but the improvement is not a sustained one.
- Nutrition Education alone improves IDA better than Iron supplementation alone.
- Nutrition Education along with Iron supplementation brings about maximum improvement in IDA status, which is sustained also.

SUGGESTIONS:
- Health programs for IDA eradication should incorporate relevant nutritional education for better short term and long term improvement.
- Nutritionists should be an integral part of any team which is involved in planning and execution of IDA eradication schemes for any age, gender or special need section of population.

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