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Effectiveness of Intervention on Knowledge of Anaemia Among School Going Adolescent Girls In a Village of West Bengal.

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ABSTRACT:- Introduction: Anaemia is one of the most important public health problems that persist worldwide, not only among pregnant women, and young children but also among the adolescents. The adolescents girl of today will be the Mother of tomorrow and if she is anaemic today she might give birth to low birth weight babies prone to infection with poor mental and physical development. With this backdrop, a study was planned and undertaken with the **objective:** To find out the baseline and post intervention knowledge of anaemia among school going adolescent girls.

Materials and Methods: This is an institution based interventional study undertaken among 176 adolescent school girls of class VIII, IX and X of a rural school of West Bengal. Data was collected by predesigned pretested questionnaire, discussion on various aspects of Anaemia followed by application of the same questionnaire to elicit the improvement of knowledge.

Result: The study population were adolescent girls with ages ranging from 12 to 16 years, with mean age 14.10 ± 1.15 years, majority belonging to Class IX(43.2%).There was a statistically significant improvement in Knowledge of anaemia following the awareness programme [t(df)= 20.241(175), p <0.0001].

Conclusion: Based on the findings of the study, it can be said that health education programme on Anaemia was significantly effective in increasing the knowledge of anaemia of those adolescent girl students. Such education programs for these girls are very essential to do away with the menace of nutritional anaemia in the community.

Key words: Effectiveness,Intervention, Anaemia , Adolescent girls.

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INTRODUCTION

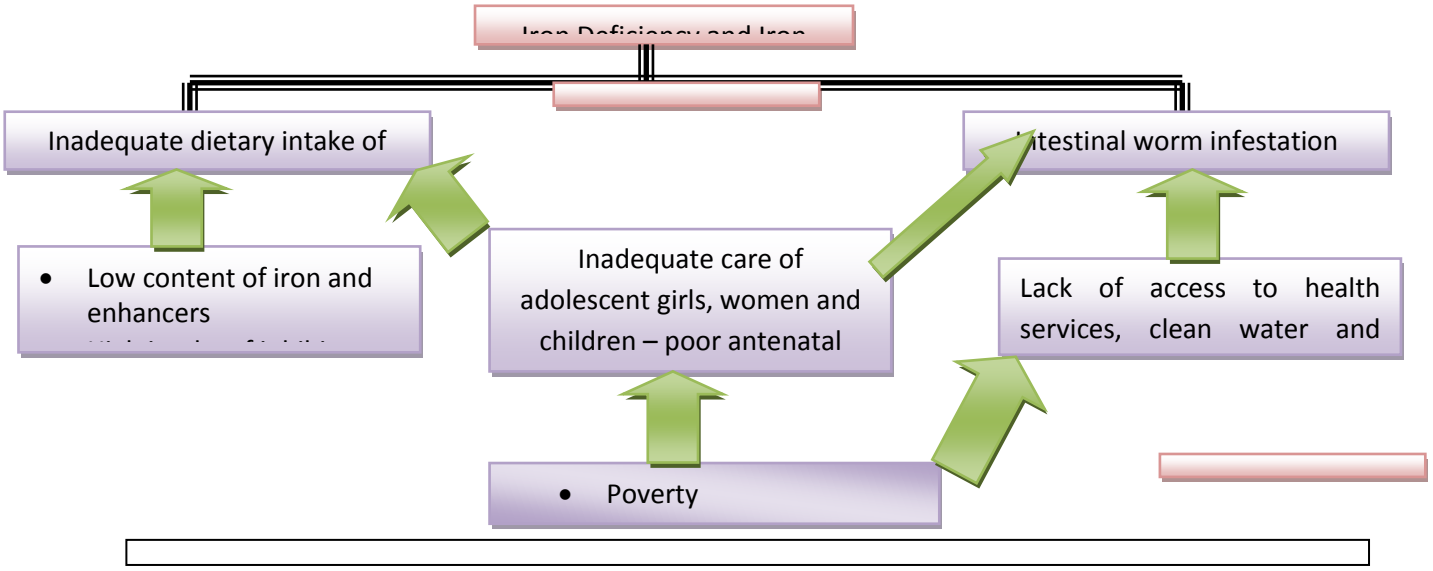
Anaemia is one of the most important public health problems that persist worldwide, not only among pregnant women, infants and young children but also among adolescents of developing countries. The term nutritional anaemia comprises all pathological condition in which the blood haemoglobin concentration 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 vitB_{12} but 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.[1,2,3]

Although the primary cause of anaemia is iron deficiency, it often co-exists with a number of other causes, such as malaria, parasitic infection, nutritional deficiencies and haemoglobinopathies. Anaemia causes poor motor and mental performance in children, impaired cognitive development, poor pregnancy outcome, poor concentration at work and low productivity in adults and economic development. There are several symptoms like easy fatigability, breathlessness on exertion, lassitude, dizziness, headache, tinnitus, vertigo like symptoms.

It also causes some psychiatric symptoms like irritability, sleep disturbance and anorexia etc. It can also affect the cardiovascular system by causing angina, dyspnoea, palpitation, heart failure etc in fact, it is observed that anaemia affects almost all the systems of the body. Again, it is the main indirect cause of MMR and IMR[4].

The criteria to pronounce that Iron deficiency anaemia is a public health problem in an area is categorised as follows[5]:

Prevalence of anaemia	**Level of public health problem**
<5%	No public health problem
5-19.9%	Mild public health problem
20-39.9%	Moderate public health problem
>40% or More	Severe public health problem



Anaemia is a major problem in India affecting 60-80% people of our population. In India anaemia is directly and indirectly responsible for 40% maternal death. It is also associated with increased IMR and low birth weight of infant.[6,7]

Prevalence of anaemia among adolescent girls are 68.6% in 12-14years, 69.7% in 15-17 years and 55.8% in 18-19 years age group. The anaemia situation in India worsened over time for women (NFHS-2 52% to 56% in NFHS-3) with a negligible improvement in West Bengal 62.7(NFHS-2) to 63.8% in (NFHS-3)[8]. The anaemia prevalence levels are more than two times higher among women than men with almost half of them with moderate to severe anaemia. The prevalence of anaemia is marginally higher in rural (57%) than urban (51%) areas but anaemia is a common problem in both urban and rural areas.

The web of causation of iron deficiency anaemia:

Adapted from Investing in future: A united call to action on vitamin and mineral deficiencies: 2009,71

Studies show that prevalence of the disease is so high because of low dietary intake, deficiency of iron and minerals, chronic blood loss due to infection such as malaria and hookworm infection[9]. Poor nutrition is the main cause of anaemia. Apart from socio-economic barrier lack of awareness also results in low intake of nutrient rich food.[10] Anaemia occurs at all stages of the life cycle but is more prevalent in pregnant women, women of reproductive age and young children.[11] The adolescents girl of today will be a Mother of tomorrow. So, if her iron status is deficient since her adolescent period she will turn out to be an anaemic mother in future and may give birth to a low birth weight baby who is always prone to diseases, poor mental and physical development and may be anaemic again. This leads to a vicious cycle centring around anaemia.

The most sad part is that there is gross unawareness and enormous ignorance among the mass regarding some grave consequences of anaemia, the havoc that it can create in the health of an individual throughout her lifecycle and the ironical fact that this nutritional deficiency can easily and undoubtedly be prevented and contained by simple modifications of some socio-demographic, behavioral and dietary risk factors.

Moreover, there is dearth of literature showing Knowledge regarding various aspects of anaemia among school gong adolescent girls. With this backdrop, a study was planned and undertaken with the objective to find out the awareness regarding knowledge of anaemia and and to find out any association of knowledge regarding anaemia with socio demographic and other behavioral factors among school going adolescent girls at Dearah village, Hooghly District of West Bengal.

OBJECTIVES

1.To determine the socio-demographic and behavioural characteristics of the school girls of Class VIII, IX and X in a Secondary school at Dearah village situated in Hooghly District of West Bengal, the rural field practice area of AIIHPH.

2. To assess the baseline knowledge of anaemia among the study population.

3. To provide Health Education to the study population through a workshop on different aspects of Anaemia.

4. To study the improvement of knowledge following the educational intervention.

5. To find out the association, if any, between the socio-demographic characteristics and the baseline knowledge of anaemia among the study population.

METHODOLOGY

STUDY AREA: Gobindopur Purnichandra Vidyayatan, a Secondary School at Dearah Village, Hooghly District of West Bengal.

STUDY POPULATION: Girl students of Class VIII, IX and X.

STUDY DESIGN: An institution based interventional study.

STUDY DURATION : 2 months(4^{th} August- 3^{rd} October 2013)

INCLUSION CRITERIA

I. All girl students of Class VIII, IX and X who were present on the day of survey and willing to participate.
II. Those students who filled up the questionnaire accurately. .

SAMPLE SIZE: 176 (Based on attendance register on the day of survey, excluding 6 girls due to improper questionnaire fill-up).

SAMPLING DESIGN:

Gobindapur village was randomly selected from all 4 villages under Nasibpur Union Health Centre at Singur, the rural field practice area of AIIHPH. The study was carried out in Gobindapur Purnachandra Vidyayatan, an upgraded secondary school at Gobindapur.

The participants were provided with a pre-designed, pre-tested questionnaire prepared by the researcher . The questionnaire was pretested among 20 students of class 8, 9 and 10, in a school at Singur and was modified accordingly. Initially the questions was judged by a group of experts of this institute and necessary correction was made to enhance the face validity and content validity.

It contained 2 parts-

Part1:Socio-demographic variables.

Part 2: Questions on knowledge of anaemia regarding -Cause, Clinical features, harmful effects and Preventive measures .

For using it in Bengali vernacular, at first, one forward and one backward translations were done parallel by one medical and one language expert so that the meaning, content and grammatical correctness of the items remained unaltered. The internal consistency of the scale was assessed with Cronbach's alpha, which was 0.66 for the scale.

One pre tested pre designed questionnaire was filled up by the students to assess their base line knowledge (pre test) followed by a health education programme. The presentation was of one hour duration and included information regarding the causes, signs and symptoms, harmful consequences of anaemia,

modes of prevention Strategies , diagnosis and treatment modalities/options under the guidelines of the national programme.

The students were then asked to fill the same questionnaire again, and the change in the level of awareness was assessed after pre-post analysis. The post-test awareness was assessed 2 weeks after the pretest. However during post testing which was done after the health education feedback questions on how they liked the teaching session and their opinion regarding inclusion of topic of anaemia in their syllabus were asked. The **dependent variable** was "good knowledge" and "poor knowledge" scores.

The **independent variables** were age, religion, caste, class/ grade, type of family, type of house, socio-economic status, father's educational status, mother's educational status, father's occupation and mother's occupation.

Statistical Package for Social sciences (SPSS) version 20 was used for the analysis.

Knowledge score:

Total six questions (Q.3 had 6 items and Q.4,5,6 had 5 items each)were used to assess respondents' knowledge of Anaemia. Two marks were awarded for every correct answer and 0 mark for every wrong answer. All scores were added and the median score calculated. Respondents that scored equal and below the median value were categorized as having poor knowledge while those that scored above the median value were categorized as having good knowledge.

Ethical considerations :

Permission to carry out the research was obtained from the officer-in –charge RHUTC, Singur followed by the District Inspector and finally from the school Headmaster. School students were enrolled after obtaining written consent from their parents and participation was purely voluntary and they were also assured that the study will not have any detrimental effect on the participants. The students were assured that

any information, thus obtained will be treated with utmost confidence.

RESULTS and ANALYSIS

Table 1: In the present study, majority of the students 52 (29.5%) belonged to of 13 years age. The mean age was 14.10 ±1.150 yrs. with a minimum age of 12 years and maximum age of 16 years. Among them 43.2 % students were from class IX, followed by class VIII 29% and class X 27.8% . Most of them were Hindus 170(96.6%) and belonged to nuclear family 126(71.6%).Majority of the study participants belonged to lower socio-economic status 91(51.7%) and they live in mixed type of house 104(59.1%).

Table 2: 106(60.2%) of the respondents knew that anaemia is caused due to iron deficiency which leads to Nutritional anaemia. Most respondents 116(65.9%) knew that low dietary intake as a cause behind anaemia. 145(82.4%) knew that eating meat, fruits and green leafy vegetables is one of the preventive measures against anaemia.

Before Health education participant's Maximum attained knowledge score was 38 and Minimum attained score was 10 with mean score of 25.50±7.19. After intervention knowledge mean score comes to 37.77±4.28, maximum score attained was 46 and minimum attained score was 20. There was a statistically significant improvement in Knowledge of anaemia following the health education programme [t(df)= 20.241(175), p <0.0001].

Table 3: Univariate logistic regression analyses indicates that before the intervention the students' level of knowledge about Anaemia was significantly associated with Age OR(95%CI)= 2.53(1.34-4.78), Class 50.20(11.63-216.65) , and mother's educational status 0.38(0.20-0.70) among which Class AOR(95%CI)= 72.47(14.61-359.57) and mother's educational status 0.28(0.12-0.67) remained significant after multivariate logistic regression

DISCUSSION

STUDY NAME	**STUDY POPULATION and STUDY SETTING**	**STUDY FINDING**	**FINDING OF PRESENT STUDY**
Prevalence			
The Prevalence of Anaemia among Reproductive Age Group (15-45 Yrs) Women in A PHC of Rural Field Practice Area of MM Medical College, Ambala, India Mishra et al 2012[12]	**R**ural women of reproductive age group of Barara PHC of Ambala district. Total 598 women were selected. Sahli´s Haemoglobinometer method was used to examine the level of haemoglobin.	**M**ost affected age group was 21-25 years	In my study, the study population was from 12- 16 years age group with mean age 14.10± 1.15.
Iron deficiency anemia in Tarahumara women of reproductive-age in Northern Mexico Joel Monárrez-Espino et al 1998 [13]	**A** cross-sectional survey was conducted in a representative sample of 481 women aged 12-49 years, residents of Guachochi Municipality, Chihuahua, from June to September 1998. The hemoglobin (Hb) level was measured in capillary	**M**ost affected age group was 12 -49 years(18.5%).	In my study, the study population was from 12- 16 years age group with mean age 14.10± 1.15.

	blood using the Hemocue technique.		
Knowledge			
An epidemiological study of Anaemia among women in reproductive age group in a slum of Konnagar Municipality of West Bengal. Ghosal.A[14]	All the females in the age group 15-49 yrs residing the ward no. 2,3and 4 of Konnagar municipality area were included in the study population and it was 3186.	78.1% of the anaemic women had insufficient or poor knowledge regarding anaemia and the association was statistically significant. It was also seen that the magnitude of anaemia was higher among the women with less educational qualification and this association was also significant.	Those participants who are in higher class AOR(95%CI) =72.47(14.61-359.57), have more knowledge comparison to class VIII and its statistically significant.

Conclusion :

I. Based on the findings of the study, it can be said that this workshop on Anaemia was significantly effective in increasing the knowledge of adolescent girl students.

II. Since the participants in this study have gained some amount of knowledge about different aspects of Anaemia, they could bring changes in their day to day wrong Practices and percolate awareness among their peer-group and also among family members.

III. The students apparently enjoyed this short teaching session and they expressed their keen desire to have such sessions more often and that prevention and control of nutritional anaemia should be included in their teaching curriculum.

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TABLES

Table 1: Distribution of the study population according to Socio-Demographic characteristics (N=176)

Characteristics	Frequency n(%)	Cumulative Frequency n(%)
Age in years		
12	10(5.7)	10(5.7)
13	52(29.5)	62(35.2)
14	51(29)	113(64.2)
15	37(21)	150(85.2)
16	26(14.8)	176(100)
Religion		
Hindu	170(96.6)	170(96.6)
Muslim	6(3.4)	176(100)
Caste		
SC	62(35.2)	62(35.2)
OBC	16(9.1)	78(44.30
General	98(55.7)	176(100)
Class in which currently studying		
Class VIII	51(29)	51(29)
Class IX	76(43.2)	127(72.2)
Class X	49(27.8)	176(100)
Type of Family		
Nuclear	126(71.6)	126(71.6)
Joint	50(28.4)	176(100)
Type of living House		
Kaccha	18(10.2)	18(10.2)
Pakka	54(30.7)	72(40.9)
Mixed	104(59.1)	176(100)
Per Capita Income(As per Modified Prasad's Scale)		
Lower(<773)	96(54.5)	96(54.5)
Upper lower(773-1546)	60(34.1)	156(88.6)
Lower middle(1547-2577)	19(10.8)	175(99.4)
Upper middle(2578-5155)	1(0.6)	176(100)
Father's Education		
Below Primary	47(26.7)	47(26.7)
Primary andabove	129(73.3)	176(100)
Mother's Education		
Below Primary	21(11.9)	21(11.9)
Primary andabove	155(88.1)	176(100)
Father's Occupation		
Farmer	146(83)	146(83)
Other	30(17)	176(100)
Mother's Occupation		
Housewife	168(95.5)	168(95.5)
Working	8(4.5)	176(100)

Table 2 : Assessment of Knowledge regarding Anaemia (N=176)

Knowledge response	Yes n(%)	No n(%)
1. General		
i. Heard about anaemia	176(100)	0
ii. Nutritional deficiency(Iron) causing anaemia	106(60.2)	70((39.2)
2. Cause		
i. Low dietary intake	116(65.9%)	60(34.1%)
ii. Eating of lots of rice	28(15.9%)	148(84.1%)
iii. Parasitic infection/infestation	74(42%)	102(58%)
iv. Excess menstrual bleeding	79(44.9%)	97(55.1%)
v. Excess intake of Meat	40(22.7%)	136(77.3%)
vi. Walking long distance	78(44.3%)	98(55.7%)
3. Signsand symptoms		
i. Shortness of breath	49(27.8%)	127(72.2%)
ii. Dizziness	95(54%)	81(46%)
iii. Lowering of blood Pressure	145(82.4%)	31(17.6%)
iv. Chest pain	136(77.3%)	40(22.7%)
v. Pallor seen in eyes and nail-bed	115(65.3%)	61(34.7%)
4. Harmful effects		
i. White discoloration of hair	92(52.3%)	84(47.7%)
ii. Increase chance of having malaria	80(45.5%)	96(54.5%)
iii. Low birth weight baby	113(64.2%)	63(35.8%)
iv. Increased chance of infection	89(50.6%)	87(49.4%)
v. Increased chance of pregnancy loss	82(46.6%)	94(53.4%)
5.Preventive measures		
i. Drinking excess bottled water	127(72.2%)	49(27.8%)
ii. Regular deworming	82(46.6%)	94(53.4%)
iii. Drinking coke	51(29%)	125(71%)
iv. Eating meat, fruits and green leaf vegetables	145(82.4%)	31(17.6%)
v. Drinking tea/ coffee	60(34.1%)	116(65.9%)

Pair sample t Test between Pre Test and Post Test Score (Maximum attainable score= 46, Minimum attainable score= 0)

Paired sample statistics	Overall Maximum	Minimum	± SD	Mean Difference (95% CI)	Mean	t value	Sig
Post Test Score	46	20	37.77 ±4.28	12.27 (11.07-13.47)	20.24	<0.0001	
Pre Test Score	38	10	25.50 ± 7.19				

Table 3: Association of Good Knowledge scores(>26) with socio-demographic characteristics

Socio-Demographic Characteristic	Good Knowledge Yes n(%)	Good Knowledge No n(%)	OR (95%CI)	AOR (95%CI)
Age =<14	46(40.7)	67(59.3)	1	1
>14	40(63.5)	23(36.5)	**2.53(1.34-4.78)**	0.802(0.34-1.87)
Religion				
Muslim	4(66.7)	2(33.3)	1	1
Hindu	82(48.2)	88(51.8)	0.47(0.08-2.61)	0.94(0.13-6.53)
Caste				
SC	31(50)	31(50)	1	1
OBCand General	55(48.2)	59(51.8)	0.93(0.50-1.73)	1.17(0.44-3.09)
Class				
VIII	2(3.9)	49(96.1)	1	1
IX and X	84(97.2)	41(32.8)	**50.20(11.63-216.65)**	**72.47(14.61-359.57)**
Type of family				
Nuclear	66(52.4)	60(47.6)	1	1
Joint	20(40)	30(60)	0.61(0.31-1.18)	0.69(0.26-1.81)
Type of House				
Kaccha	11(61.1)	7(38.9)	1	1
PakkaandMixed	75(47.5)	83(52.5)	0.58(0.42-1.56)	0.41(0.09-1.82)
Per Capita Income				
Lower <773	37(43.5)	48(56.5)	1	1
Others >=773	49(53.8)	42(46.2)	1.51(0.84-2.74)	1.37(0.57-3.28)
Father's Education				
Primaryand Below	60(53.6)	52(46.4)	1	1
Above Primary	26(40.6)	38(59.4)	0.59(0.32-1.10)	0.55(0.22-1.34)
Mother's Education				
Primaryand Below	55(60.4)	36 (39.6)	1	1
Above Primary	31(36.5)	54(63.5)	**0.38(0.20-0.70)**	**0.28(0.12-0.67)**
Father's Occupation				
Farmer	71(48.6)	75(51.4)	1	1
Others	15(50)	15(50)	1.06(0.48-2.32)	0.86(0.30-2048)
Mother's Occupation				
Housewife	81(48.2)	87(51.8)	1	1
Working mothers	5(62.5)	3(37.5)	1.80(0.41-7.73)	3.15(0.41-24.10)