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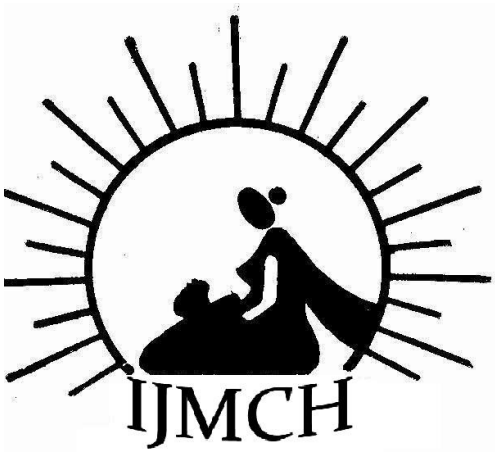

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Is there any relationship between level of hemoglobin percentage and academic performance of adolescent girls.

Anemia and its effect on Academic performance of Adolescent girls of Sivasagar Town

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ABSTRACT

Research Question: Is there any relationship between level of hemoglobin percentage and academic performance of adolescent girls.

Settings: Study was conducted in Sivasagar town area.

Study design: Design of the study was both survey and experimental. The initial survey was done to find out hemoglobin level of adolescent girls of the study area.

Participants: Participants of the study were adolescent girls within the age group of 16-19 years of age.

Methodology: Quota sampling method was used for the survey, 200 was the size of the sample. 42 anemic girls were selected randomly for the experimental design.

Results: 95.35% adolescent girls were found to be anemic in the study area. Experimental study showed a positive correlation between levels of hemoglobin percentage and academic performance of adolescent girls.

Key words: Anemia; Adolescent girl; Academic performance.

INTRODUCTION

Adolescence is a period of transition from childhood with accelerated physical, biochemical, social and emotional development. During this period the final growth spurt occurs. There are many bodily changes in this stage due to the influence of hormones. Puberty takes place, menstruation starts in case of girls. Because of which iron and folic acid requirements for girls increases in adolescent stage (*NIN*, *1999*).[1] This stage of human life is very important when studied in terms of nutritional requirements. Iron is one of the most important micro nutrients in our body. Iron combine with protein for making of hemoglobin, the red coloring matter of blood. When deficiency of iron occurs in human body it leads to anemia. Anemia in turn effects on various physical and mental activities. It causes unusual tiredness also.

Anemia is not a disease but a sign. *WHO* (*1968*)[2] defined anemia as a condition in which the hemoglobin content of blood is lower than normal as a result of deficiency of one or more essential nutrients, regardless of the cause of such deficiency. *Basta*[3] defined anemia as "a condition in which the hemoglobin content of blood is lower than the normal as a result of a deficiency of one or more essential nutrients which effects the physical work capacity by reducing the availability of oxygen to tissues which in turn affects cardiac output of the heart , eventually leading to death in severe cases".

Many studies have shown that anemia effects on physical as well as mental abilities of individuals. Cai and Yan, in 1990[4] observed that speed and endurance capabilities of students were correlated directly with hemoglobin level. Li *et al*[5] reported that iron deficiency reduces the mental and motor development test scores of infants. Iron deficiency adversely affects behaviour by impairing cognitive functions and limiting activity and work capacity (Lozoff, 1988).[6] Agarwal *et al*[7] have reported that iron deficiency anemia has been shown to have an adverse effect on cognitive processes as indicated by lower scores of anemic children on test of development and learning.

So the main aim of the study was to find out the relationship between anemia and academic performance of adolescent girls. The study also aimed to create awareness among adolescent girls and their parents about natural healthy food.

METHODOLOGY

The adolescent girls of Sivasagar town were taken as sample for the study. The first stage of the study was to find out hemoglobin level of 200 adolescent girls of the study area. 95.35% of them are found to be anemic (Hb < 12 gm/dl). Out of these anemic adolescent girls, 42 samples were randomly selected for the experimental study. At the end of the study, lecture classes were organized for creating awareness about importance of natural healthy food among adolescent girls. Two nutrition experts were invited for the same.

42 anemic girls of 16-19 years of age were selected randomly for the experimental study. Scores of academic performance and hemoglobin count were taken thrice at an interval of 2 months from both experimental and control group. After collection of initial set of data iron rich food and iron capsule were administered to the experimental group. Second set of data were collected after 4 months and the third set after 6 months.

To find out correlation between hemoglobin level and academic performance, Co-efficient of correlation (Spearman's Coefficient) and regression equation methods were used for analysis of data.

RESULTS

The samples of the study were divided into 2 groups i.e. 16-17 years and 18-19 years for comparison. The initial survey of hemoglobin level of adolescent girls of study area gives a very disappointing picture. Table 3.1 and 3.2 shows the prevalence and level of anemia. Though the level of anemia is almost same in both the groups, severity of anemia is more in the age group of 16-17 years.

Table I: Prevalence of anemia among adolescent girls

16-17 years	18-19 years	16-17 years	18-19 years
Hb ≥ 12 gr/dl		Hb< 12 gr/dl	
2%	7.25%	98%	92.75%

Table II: Level of Anemia of among Adolescent Girls

	Mild	**Moderate**	**Severe**	**Total**
16-17 yrs	63.2%	32.6%	4.08%	98%
18-19 yrs	64.70%	31%	3.90%	92.70%

Experimental study was analyzed by correlation method. Correlation and Regression Equation of Academic Performance and Prevalence of anemia among Adolescent Girls are as follows:

First Set of Data – Initially collected data was considered as first set of data (X_{10}, Y_{10}). It reveals following facts –

Coefficient of correlation: r= -.017425,

Second set of Data – After administering iron supplements and iron rich food to the experimental group for two months (X_{20}, Y_{20}) reveals following facts –

Coefficient of correlation: r = -. 073138,

Third set of Data – After another two months supplementation of iron and iron rich food data were collected (X_{30}, Y_{30}).

Coefficient of Correlation: r = 0.6110

Regression Equation: y = 43.226 + 7.591x

First and second sets of data revealed a negative correlation but third set of data shows a positive correlation between the variables. The regression equation shows that per unit positive change in hemoglobin level, there will be 7.59 units positive change in academic performance at 95 % confidence level.

DISCUSSION

Prevalence of anemia in the study area is 95.35% which is much more than the national figure of 56% (NFHS-3, 2005-2006).[8] Soemantri *et al*[9] found that iron supplementation among iron deficient school children improved their learning processes as measured by their school achievement test scores. In the present study also it was found that there is an increase in academic performance score of adolescent girls along with the increase of their hemoglobin level. Spearman's Coefficient method revealed a positive correlation between hemoglobin level and academic achievement of adolescent girls.

CONCLUSION

The study shows that 98% and 92.7 % of adolescent girls of age group 16 -17 and 18 -19 years respectively were anemic. Experimental study revealed a positive correlation between prevalence of anemia and academic performance of adolescent girls. Therefore it is important to make adolescent girls and their parents aware of prevalence of anemia and also to take preventive measures for the same.

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