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PREVALENCE OF ANAEMIA AMONG RURAL ADOLESCENT GIRLS IN JEHANABAD DISTRICT, BIHAR

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ABSTRACT

Adolescence is a crucial stage of a women's life and needs utmost care for healthy future. Anaemia is a serious health threat in adolescent girls and is mainly influenced by dietary iron-intake. Blood hemoglobin(Hb) level is the indicative of iron-intake and anaemia status in any human beings and hence in adolescent girls. The study has been carried out on 204- rural adolescent girls of Jehanabad district, Bihar with an objective to assess the prevalence of anaemia and its association with haemoglobin and dietary iron-intake, as the problem of anaemia has been increasing during the past years and more so in rural areas. The girls were randomly selected from three of the rural schools, age ranges from 10-11 to 15-16 years; the blood hemoglobin levels were assessed through Sahli's method with the help of private clinics and the informations were collected with the help of pre-designed questionnaire. It was found that a large number of girls, as high as more than 90% were suffering from lower hemoglobin level indicating anaemia. The daily dietary intakes of iron were also lower in majority of adolescent girls. The study indicated very high prevalence of anaemia among rural adolescent girls and suggested for improvement of the status through diary knowledge.

Key words : Prevalence of anaemia, rural adolescent girls, Jehanabad district.

Approximately 20 % world's population is adolescents and majority of them live in the developing countries. Adolescence is a period between puberty and the completion of physical growth from 11 to 19 years of age. Adolescents particularly girls are especially vulnerable to iron deficiency due to low intake and absorption of iron along with increased iron requirement for growth and replacement of menstrual blood losses. (Brabin L, Brabin BJ, 1992). Growth, development and ability to concentrate and learn during adolescence are negatively affected by anaemia. In Sout-East Asia, impaired cognitive process in adolescents was found to be associated with anaemia and improved after supplementation (Nelson M, 1996). Anaemia decreases energy and physical strength resulting in reduced physical capacity and work performance in men and women (Berhman JR, 1992). Lower school achievements and poor performance in school are associated with anaemia (Walker SP *et.al.,* 1996). A number of Indian studies also showed poor immune response associated with low hemoglobin levels in human beings at all ages (Rana T, 1983; Seshadri S, 1996 and Chaturvedi, 1996).

Therefore, this study has been undertaken to find out the prevalence of anaemia in rural adolescents in Jehanabad district, Bihar as no such studies have so far been conducted on this aspect.

MATERIALS AND METHODS

This was a cross-sectional study and the adolescent girls were randomly selected from three rural schools of Jehanabad district of Bihar state. A total of 204- school going girls were selected, within the age range of 10 - 11 to 15 - 16 years and the questionnaire/ pre-tested schedule was used to record data from the subjects. The hemoglobin levels were assessed through Sahli's method with the help of private clinic technicians and iron intake was assessed by 24 hour dietary recall method. The adequacy of iron in take by each subject was computed in terms of Nutrient Adequacy Ratio (NAR). using the formula NAR= subject's iron intake of a day / RDA for the iron.

Thereafter, the subjects were categorized as those having NAR, = 1.0 = adequate, 0.66-<1.00= fairly adequate and <0.66 = inadequate. The nutritional knowledge was assessed by scoring the nutritional awareness as good or poor according to their knowledge levels for the iron-intake/requirement daily by those subjects.

RESULTS AND DISCUSSION

The results were shown in table 1 to 5. Age-wise distribution of adolescent girls has been shown in Table 1 and the age-wise distribution of anaemia was found

Table-1 : Distribution of adolescent girls according to age.

Age(y)	Number	%
10-11	32	15.68
11-12	29	14.22
12-13	36	17.65
13-14	35	17.16
14-15	34	16.67
15-16	38	18.62
Total	204	100.00

Table-2 : Anaemia status of adolescent girls according to Hb-level (mm Hg)**.**

Age(y)	Number	Hb-level (mm Hg)	
		<11.00	>=11.00
10-11	32	28 (87.50%)	04
11-12	29	29 (100%)	00
12-13	36	34 (94.44%)	02
13-14	35	33 (94.29%)	02
14-15	34	33 (97.06%)	01
15-16	38	35 (92.11%)	03
Total	204 (100%)	192 (94.12%)	12 (05.88%)

Table-3 : Anaemia status of adolescent girls according to daily Iron-Intake.

Age(y)	Number	Hb-level (mm Hg)	
		<11.00	>=15
10-11	32	30(93.75%)	-
11-12	29	27(93.10%)	-
12-13	36	33(91.67%)	-
13-14	35	-	31 (88.57%)
14-15	34	-	32 (94.12%)
15-16	38	-	34 (89.47%)
Total	204	90/97 (92.78%)	97/107 (90.65%)

(187/204=91.67)

maximum (97%) in 14-15 years of age group. However, adolescent girls of all the ages were having highest prevalences of anaemia with an average of 94.1 2% over the age-ranges. Only 05.8 8% girls were having normal hemoglobin level i.e, more than 11 mm Hg , maybe because of slightly better social-economic status resulting in better dietary intake / nutrients intake, but the percentage was too low and indicated very poor health status of adolescent girls. When the daily iron intake was taken into consideration, approximately 92% within 10 -13 years and 90% within 13 -16 years were found to have low iron consumption in their daily diets. This again reflected a high percentage of adolescent girls ultimately having anaemia due to poor dietary intakes of iron daily.

According to the Nutrients Adequacy Ratio (Table-4), again a very high percentage of adolescent girls (81.25% - 94.74%) were under inadequate category; none was found within the adequate category with very few (8.32 %) in the fairly adequate category. The overall scenario reflected on nutritional deprivation, lower socio-economic status and higher prevalence of anaemia over the entire age ranges. This was further aggravated with poor nutritional knowledge (91.18%) existing within the socio-economic groups leading to high prevalence of anaemia among the study population.

Adolescence is a period of rapid growth with inadequate and improper dietary habits. They are vulnerable to all kinds of nutritional morbidities; malnutrition and worm- infestation further aggravate the problem. WHO/UNICEF (WHO/UNICEF,1996) suggested that the problem of anaemia is of very high magnitude in a community when prevalence rate exceeds 40%. Taking into consideration that anaemia development is a consequence occurred at a later stage of inadequate iron intake, the problem of

Table-4 : Anaemia status of adolescent girls according to daily Iron-Intake.

Age(y)	Number	NAR		
		Inadequate (<0.66)	Fairly adequate (0.66-1.00)	Adequate (>=1.00)
10-11	32	26 (18.25%)	06	-
11-12	29	25 (86.20%)	04	-
12-13	36	33 (91.67%)	03	-
13-14	35	33 (94.29%)	02	-
14-15	34	33 (97.06%)	01	-
15-16	38	36 (94.74%)	02	-
Total	204	186 (91.18%)	17 (08.32)	-

Table-5 : Nutritional knowledge and anaemia status of adolescent girls.

Nutritional knowledge	Number	%
Good	18	0.82
Poor	186	91.18
Total	204	100.00

inadequate iron intake is in these adolescent girls with occurrences more than 80% should be considered critical. Studies on adolescent girls in Delhi (Agarwal *et al,* 2003)and Chandigarh (Basu *et al,* 2005) revealed as good as 49% and 25% anaemic cases due to iron deficient diet as well as lower nutritional status. The present study showed very high prevalence of anaemia (79%) resulting out of both lower iron -intake and deficient nutritional status due to lower socio-economic background and lack of proper nutritional knowledge.

CONCLUSION

With greater importance on the health of women in general and adolescent girls in particular, the picture of lower hemoglobin status and iron-deficiency anaemia is quite alarming. Poor quality of diet consumed from the early childhood and coupled with the poor nutritional knowledge in the low socio-economic groups were the major factors for high prevalence of anaemia among adolescent girls. Hence, community nutrition education programs must be undertaken to educate the mass and should constituted a part of the school curriculum in order to minimize the prevalence and for a healthy society.

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