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Prevalence and Factors Influencing Anemia among Adolescent Girls: A Community Based Study

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Abstract: ***Anemia is a common problem of pregnant women across a developing country like India. The prevention of anemia in adolescent period can reduce its consequences during pregnancy and childbirth. In order find the prevalence and factors influencing anemia, a cross sectional study was conducted in urban filed practice area of Basaveshwara Medical College and Hospital, Chitardurga. A total of 544 adolescent girls were tested for the hemoglobin. The prevalence of anemia was 56.3% in this study. Age, socio economic status, type of family, education, mother's education, mother's occupation and eating habits were found to have non-significant association with occurrence of anemia in this study. Anemia is a complex disorder not only associated with dietary factors but also influenced by other factors. Effective primary health care with iron supplementation added with control of contributing factors can prevent anemia.***

Keywords: Anemia, Prevention, Adolescent, Prevalence, Iron supplementation

1. Introduction

Adolescence is the age group between 10 to 19 years as defined by World Health Organization[1]. This age coincides with the period of peak growth for boys and girls[2]. Nutritional requirements are more during adolescence with comparatively with body size[3]. Which make these age groups vulnerable to nutritional deficiencies especially in girls. Adolescence in girls is viewed as a special period as it is viewed as a change from girlhood to womanhood. About one fifth of the female population in with world is constituted by the adolescent girls. In a country like India with varying social customs and common beliefs against females there is a high prevalence of malnutrition amongst girls. The level of hemoglobin of a person is one of the indicators of overall health status of a person. Prevalence of anemia is more common in the girls belonging to lower socio economic strata. As the adolescent growth spurts occurs the nutritional status gets worsened.[4]Anemia in adolescent girls in future attributes to high maternal mortality rate, high incidence of low birth weight babies, high perinatal mortality and fetal wastage. So the present study was conducted to find out prevalence of anemia in an urban slum of Basaveshwara Medical College Hospital and Research Centre, Chitradurga and to study some of the socio-demographic associated with it.

2. Material and Methods

This cross sectional study was conducted in Urban health training Centre at Ayyannapete Chitradurga, is urban field practice area attached to the department of Community Medicine Basaveshwara Medical College Hospital. Total population covered by urban health training center is 50,000.The field practice area is divided into ten slum areas, out of which one area i. e. Kamanabhavibadavane was selected by simple random sampling (lottery method).The population of the area is approximately 6000. Considering P=0.7, with 10% error, the sample size calculated was 544. But for a better coverage, it was decided to include all eligible adolescent girls in the study. All unmarried, nonpregnant, nonlactating adolescent girls (10 to 19 years) were included in the study (n=544). After obtaining permission from Institutional Ethical Committee, a community based cross sectional study was carried out with the help of medico social worker from June 2013 to February 2014. After getting informed consent, information regarding socio-demographic was recorded in pre-designed, pre - tested proforma. Socio-demographic status was estimated by modified B. G. Prasad's classification. The adolescent girls were made to attend Urban Health Training center for hemoglobin estimation. Due to feasibility and cost effectiveness hemoglobin estimation was done by Sahli'shaemoglobinometer. For interpretation of anemia, Hb% <7% is considered as severe anemia, 7% to <10gm% was considered as moderate anemia, Hb% from 10% - <12% is considered mild anemia, Hb% above 12gm% is considered normal. It may be due to very high prevalence of anemia in the study group. The data was obtained in a pre designedproforma, entered in to an excel sheet and analyzed using Statistical Package for Social Services vs 21. A binomial logistic regression analysis was applied to test the association between the factors determining anemia in adolescent girls.

3. Results

The prevalence of anemia among adolescent girls in this study was 56.3%. About 48.3% of the normal and 45.8% of the anemic girls were aged between 10 – 13 years. The age of 29.1% of the adolescent anemic girls were aged between 14 – 16 years and 24.5% were aged between 17 – 19 years. More than half of adolescent girls in this study belonged to Class IV socio – economic state and nuclear families. About 47.1% of the girls in normal group and 47.4% in the anemic group were educated up to high school. The mother's of 53.8% of the normal girls and 52.3% of the anemic girls were educated up to primary school only.

Table 1: Socio demographic variables of the study group

Particulars		Normal n (%)	Anemia n (%)
Age group	10 – 13 years	115 (48.3)	140 (45.8)
	14 – 16 years	76 (31.9)	91 (29.1)
	17 – 19 years	47 (19.7)	75 (24.5)
Socio Economic status	Class I	4 (1.7)	6 (2.0)
	Class II	15 (6.3)	29 (9.5)
	Class III	36 (15.2)	56 (18.4)
	Class IV	129 (54.4)	155 (50.8)
	Class V	53 (22.4)	59 (19.3)
Type of family	Nuclear family	166 (69.7)	203 (66.3)
	Joint family	72 (30.3)	103 (33.7)
Girl's Education	Graduate	18 (7.6)	34 (11.1)
	Pre University course	78 (32.8)	80 (26.1)
	High school	112 (47.1)	145 (47.4)
	Primary School	30 (12.6)	47 (15.4)
Mother's education	Graduate	16 (6.7)	14 (4.6)
	Pre University course	16 (6.7)	34 (11.1)
	High school	39 (16.4)	57 (18.6)
	Primary School	128 (53.8)	160 (52.3)
	Illiterate	39 (16.4)	41 (13.4)
Mother's Occupation	House wife	185 (77.7)	224 (73.2)
	Labourer	36 (15.1)	60 (19.6)
	Business	17 (7.1)	22 (7.2)

Table 2: Eating Habits of study group

Particulars		Normal n (%)	Anemia n (%)
Type of diet	Predominant vegetarian diet	175 (73.5)	227 (74.2)
	Predominant non vegetarian diet	63 (26.5)	79 (25.8)
Frequency of consumption of meat	No consumption	175 (73.5)	227 (74.2)
	Weekly or less often	36 (15.1)	48 (15.7)
	Weekly twice or thrice	27 (11.3)	31 (10.1)
Frequency of consumption of fresh fruits and vegetables	Weekly or less often	144 (60.5)	162 (52.9)
	Weekly twice or thrice	94 (39.5)	144 (47.1)

The diet pattern of the adolescent girls was examined in this study. Nearly three fourth of the adolescent girls in both the group were consuming predominant vegetarian diet. About 11.3% of the normal girls and 10.1% of the anemic girls were consuming non vegetarian diet two to three times in a week. About 60.5% of the normal girls and 52.9% of the anemic girls were consuming fresh fruits and vegetables two to three times a week.

Table 3: Multivariate analysis of factors influencing anemia in adolescents

Variables	B	Sig.	Odd's ratio
Age	.127	.250	0.88
Socio economic status	-.162	.095	1.18
Type of family	.145	.441	0.87
Girl's education	.031	.767	0.97
Mothers' education	-.064	.458	1.07
Mother's occupation	.143	.329	0.87
Diet	-.006	.987	1.01
Frequency of consumption of meat	-.013	.956	1.01
Frequency of consumption of fresh fruits and vegetables	.090	.610	0.91

The binomial regression analysis had shown that age, type of family, girl's education, mother's occupation the diet and frequency of consumption of fresh fruits and vegetables had odds ratio of less than 1 indicating that they are not associated with occurrence of anemia. Socio – economic status, Mother's education, diet and frequency of consumption of meat had odds ratio of more than 1. None of the variables had significant association.

4. Discussion

Adolescence is an age of transition from childhood to adulthood. This is an age of puberty also. Hence many

factors can contribute to the occurrence of anemia. The crux of the problem is adolescent woman will become pregnant after problem which in turn result in anemia during pregnancy. The diet, excess blood loss during menarche and other factors can influence anemia in a developing country like India with predominant lower socio – economic status population. The studies conducted across the country have also shown the same. The prevalence of anemia in this study was 56.3% which is lower than that conducted in Nepal.[5]Similar study from southern part of India, has also noted a prevalence of 45.2% in the adolescent girls slightly lesser than this study.[6]The studies from Maharashtra[7] and 16 districts of India[8] had shown a prevalence of more than 90% among the adolescent girls. The studies available have shown a variable prevalence of anemia from 23.9% to 81.8% among the adolescent girls.

Many factors have been shown to influence anemia in adolescent girls. They include teenage per se, socio – economic status, hormonal changes and excessive blood flow during menstruation, diet and open air defecation and bare foot walking. Balciet al[9] had shown that The eating habits of anemia influences the factors of anemia. In this study majority of the girls were eating predominant vegetarian diet and only minority were consuming the non vegetarian diet. The study from Iran had shown that the traditional eating habit contributes to the development of anemia super added with other associated factor. This study had also demonstrated that the odds ratio was not significantly associated with a single factor. These findings are also in corroboration with the other study in Sanliurfa where the high rate of red meat consumption had low incidence of anemia.

5. Conclusion

Anemia is a common disease among adolescent girls is not only a consequence of pregnancy in a developing country like India. The national program of prevention of anemia has now focused on the anemia of the adolescent girls. Effective iron supplementation with deworming at regular intervals contributed with effective treatment of early menstrual disorders can effectively halt anemia and thus prevent in pregnancy. Effective primary health care with constant expert help can prevent the anemia. This study has not considered the consumption of iron and folic acid supplementation, deworming at regular intervals and other factors influencing anemia which is limitation of the study.

References

[1] Programming for adolescent health and development: WHO Tech.Rep.Sr.no 886; 1996:2.
[2] Tanner JM. Growth of Adolescents, 2nd edn. Oxford, Blackwell Scientific Publication, 1962, pp 326-341.
[3] Pushpamma P, Geervani P, Lakshmi Devi N. Food intake, nutrient adequacy and anthropometry of adolescents in Andhra Pradesh. Indian J Med Res 1982, 75: 61-67.
[4] Senapati SK, Bhattacharya S, Das DK. The girl child: An exposition of their status. Indian J Commun Med 1990, 1:15-19.
[5] Shah BK, Gupta P. Anemia in adolescent girls: a preliminary report from semi-urban Nepal. *Indian Pediatr*2002; 39(12):1126-30.
[6] Siddharam SM, Venkatesh GM, Thejeshwari HL, A study of anemia among adolescent girls in rural area of Hassan District, Karnataka, South India, International Journal of Biological and Medical Research: 2011: 2: 4: 922 – 924.
[7] Kulkarni MV, Durge PM, Kasturwar NB, Prevalence of anemia among adolescent girls in an urban slum, National Journal of Community Medicine: January: 2012: 3: 1: 108 – 11.
[8] Toteja GS, Singh P, Dhillon BS et al. Prevalence of anemia amongst pregnant women and adolescent girls in 16 districts of India. Food Nutr Bull. 2006; 27:311-316.
[9] Balci YI, Karabulut A, Gurses D, Covut IE, Prevalence and risk factors of anemia among adolescents in Denizli, Turkey, Iran J Pediatr: Mar: 2012: 22: 1: 77- 81.
[10] Koc A, Kosecik M, Vural H et al. The frequency and etiology of anemia among children 6-16 years of age in the southeast region of Turkey. *Turk J Pediatr*2000;42(2):91–5