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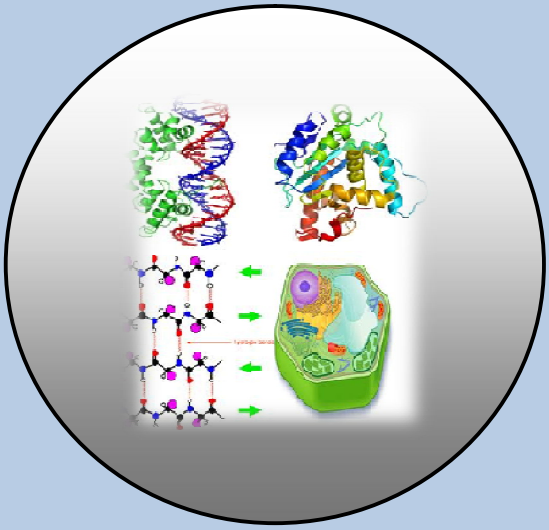
ISSN 0970-4973 (Print)
ISSN 2319-3077 (Online/Electronic)

Index Copernicus International Value
IC Value of Journal 4.21 (Poland, Europe) (2012)
Global Impact factor of Journal: 0.587 (2012)



J. Biol. Chem. Research
Volume 31 (1) 2014 Pages No. 342-348

Journal of Biological and Chemical Research

(An International Journal of Life Sciences and Chemistry)

Published by Society for Advancement of Sciences®

J. Biol. Chem. Research. Vol. 31, No. 1: 342-348 (2014)
(An International Journal of Life Sciences and Chemistry)

ISSN 0970-4973 (Print)
ISSN 2319-3077 (Online/Electronic)

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RESEARCH PAPER
Received: 24/01/2014 Revised: 17/02/2014 Accepted: 20/02/2014

Effect of Socio-Demographic Characteristics on the Prevalence of Anemia among School Going Adolescent Girls in Rural Areas of Lucknow District, India

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ABSTRACT

Adolescence has been defined by the World Health Organization as the period of life spanning the ages between10-19 years. Protein energy malnutrition and iron deficiencies are major health concerns in adolescent girls. Anemia is a serious public health concern in most developing countries and the prevalence of anemia is quite high among adolescent girls. To study the prevalence of anemia and the various socio-demographic characteristics in relation to anemia. A cross-sectional descriptive study was carried out among school going adolescent girls in rural schools of the Lucknow district, Uttar Pradesh, India from June 2013 to September 2013.Multistage random sampling was used to select the requisite number of girls. A total of 254 school going adolescent girls (10-19 years of age) were interviewed. Information regarding their socio-demographic characteristics was collected and the girls were also examined for presence or absence of pallor for anemia. Statistical analyses were done using percentage, Chi-square test, and odds ratio. The prevalence of anemia was found to be 55.6% in rural school going adolescent girls and significant association of anemia was observed with religion, caste and socioeconomic status (p value<0.05). There is need to develop strategies for intensive adult education, nutrition education and dietary supplementation including anemia prophylaxis.

Keywords: Socio-demographic characteristics, Anemia, Adolescent Girls, Malnutrition and Iron Deficiency.

INTRODUCTION

Adolescence has been defined by the World Health Organization as the period of life spanning χχ ages between10-19 years (WHO. 1996). Protein energy malnutrition and iron deficiencies are major health concerns in adolescent girls. The common causes include inadequate intake of dietary iron infectious diseases, deficiencies of micronutrients such as folate, vitamin B12, inherited conditions such as thalassemia and environmental pollutants such as lead (Mikki et al., 2011). Adolescent girls need extra iron for menstruation in addition to growth and development. Iron deficiency anemia impairs cognitive and behavioral development resulting in reduced school performance (WHO. 1998) further; low iron stores throughout childhood may contribute to a delayed menarche and impaired immune response (Rawat et al., 2011). Anemia in adolescent girls in future attributes to high maternal mortality rate; high incidence of low birth weight babies and high perinatal mortality (Kulkarni et al., 2012). In India, anemia is the second most common cause of maternal deaths, accounting for 20% of total maternal deaths[6].
National Nutritional Anemia Prophylaxis Programme (NNAPP) was initiated in 1970 during fourth five-year plan with the aim to reduce the prevalence of anemia to 25 % (Kakkar et al., 2010). With these back ground, this cross sectional study was undertaken to find the prevalence of anemia in rural areas of Lucknow district.
To study the prevalence of anemia and the various socio-demographic characteristics in relation to anemia among school going adolescent girls in the Lucknow district

MATERIAL AND METHODS

A school based cross-sectional study was carried out on adolescent girls (10-19 year of age) for a period of four months from June 2013 to September 2013 in Rural area of Lucknow district under department of community medicine of Era's Lucknow Medical College and Hospital.
Hb criteria were taken according to WHO standard.

Sample Size

The basis for sample size calculation was prevalence of anemia. In NFHS -3, UP, 2005- 06 report, the prevalence of anemia among adolescent girls in Uttar Pradesh is reported to be 50%.

Sampling Technique

Multistage random sampling technique was used to select the requisite no of girls.

Selection of Sample

Requisite sample size was reached in following stages:
First stage- At first stage rural area of Lucknow district will be divided into eight blocks.
Second stage-At the second stage two blocks will be randomly selected, from the eight blocks. In the next step from each block one senior secondary school will be randomly selected.
Third stage- At the third stage in a given school students from classes V1 to XII to age group 10-19 years will be selected. Students within the class will be selected through Simple random sampling technique.

By using this multistage random sampling technique two schools will be randomly selected in rural area and 254 adolescent girls will be chosen from these schools.

Inclusion Criteria

All school going adolescent girls of age group 10-19 years in rural areas of Lucknow.

Exclusion Criteria

All adolescent who show non co-operative attitude, or refusal to provide necessary information.

Absenteeism of the subjects from the school during the period of survey.

Tools of Data collection

By interviewing the adolescent girls information about name, age, religion, socioeconomic strata, birth order, and family type was collected on a pretested and predesigned proforma. The pre tested questionnaire included various factors that have a potential effect on hemoglobin level of school going adolescent girls. The lab examination for hemoglobin level was done by Sahli's hemoglobinometer and symptoms of illness were recorded, girls were also examined for presence or absence of pallor for anemia. Health status was assessed by status of anemia.

Working Definition

Haemoglobin: It is calculated by using Sahli's hemoglobinometer.

Anemia will be defined according to World Health Organization (WHO) cut-offs as Hb level < 11.0 g/dL for girls. Mild anaemia is defined as Hb levels between 9.0 g/dL and the cut-off points, moderate anaemia is Hb 7.0–8.9 g/dL and severe anaemia is Hb < 7.0 g/dL (United Nations Report, 1995).

Statistical Analysis of Data

Data is analyzed statistically using the statistical software SPSS 17.0 for windows. Chi –square test was used to make categorical comparison.

RESULTS

Table 1. Prevalence of anemia among school going adolescent girls.

ANEMIA	RURAL		P- value	X^2 test
	Adolescent girl	Adolescent girl %		
Present	147	57.9%	0.012	
Absent	1o7	42.1%		
Total	254	100		

Table 2. Age wise distribution of prevalence of anemia among adolescent girls.

Age in years	Adolescent girls(n=254)	Anemia cases(n=147)	Anemia cases (%)	p-value	x^2 test
10-12	150	84	56 %		
13-15	70	42	60 %		
16-19	34	21	61.1 %	0.757	0.557
Total	254	147	57.9%		

A total 400 girls were studied. Of that 37.4% (157) were in the age group 10-13 years. Followed by 26.9% were in age group 14 years, 18.6% were in age group 12 years, 9.8% were in age group 15 years and very few that is 5% and 2.4% in the age group 11 and 10 years.

DISCUSSION

The Government of India has made the adolescent health asa part of Reproductive and Child Health (RCH) Package since 1997. The anemia in this age group has been identified as an important health problem by De Maeyer and Adiels-Tegman, 1985 followed by further reinforcement at the 1994 International Conference on Population and Development held at Cairo (United Nations Report, 1995). The study area revealed that the overall prevalence of anemia as 57.9% in school going adolescent girls in the Rural area of Lucknow district. Findings of the present study are almost in accordance with, Kapoor and Aneja 1992 (60%), Singh et al., 2006. (56%), Rana, 1983 (60%), several other workers have reported a higher prevalence of 73.7%, 74.7% and 47.6% respectively.

CONCLUSION

Anemia is a serious public health concern in most developing countries and the prevalence of anemia is quite high among adolescent girls. It was found that more than half of the schools going adolescent girls were suffering from anemia.

Anemia has many critical health and nutritional implications in adolescent girls, which leads to poor pregnancy outcome, impaired school performance, decreased work productivity and other adverse outcomes.

RECOMMENDATIONS

To initiate strengthening of anemia prophylaxis programs for adolescent girls including nutritional education. Health education may be useful for improving the health status of adolescent girls and this could be imparted in all the schools with the help of heath personnel, NGOs. The teachers of the schools should be trained on health education and health promotion. Development of an information, education, and communication (IEC) strategy tailored to adolescent girls.

Table 3. Socio-demographic characteristics of anemia among school going adolescent girls.

Religion	**Adolescent girls (no=400)**	**Anemia cases (n=280)**	**Anemia cases (%)**
Hindu	**238**	**141**	**59.2**
Muslim	**16**	**6**	**37.5**
Total	**254**	**147**	**57.9**
p value	**0.088**		
X^2 test	**2.91**		
Caste			
General	**54**	**29**	**53.7**
OBC	**114**	**61**	**53.5**
SC/ST	**86**	**57**	**66.3**
Total	**254**	**147**	**57.9**
p value	**0.152**		
X^2 test	**3.77**		
Birth Order			
1-2	**154**	**91**	**59.1**
3-4	**73**	**41**	**56.2**
=5	**27**	**15**	**55.6**
Total	**254**	**147**	**57.9**
p value	**0.887**		
X^2 test	**0.241**		
Family type			
Nuclear	**200**	**111**	**55.5**
Joint	**54**	**36**	**66.7**
Total	**254**	**147**	**57.9**
p value	**0.140**		
X^2 test	**2.17**		

Table 4. Prevalence of anemia in adolescent girls according to socio-economic status (SES).

SES	**Adolescent girls**	**Anemia Cases**	**Anemia Cases (%)**
I	-		
II	10	5	50
III	152	91	59.9
IV	92	51	55.4
Total	254	147	57.9
p value	0.695		
X^2 test	0.727		

Safe and effective public health interventions are needed to address iron deficiency anemia in adolescent girls. Improving education for girls and young women. Poor girls are least likely to be able to attend school. Literacy programs and other non formal education for such non school attending adolescent girls.

Although disparities between enrollment rates for girls and boys remain,

Targeted efforts to improve girls' education and schooling for girls must be raised.

Promote good sanitation practices such as wearing shoes and using latrines

To educate females about healthy diet, and how to overcome anemia Iron - Iron-rich foods include beef and other meats, beans, lentils, iron-fortified cereals, dark green leafy vegetables, and dried fruit.

Folate- It is found in citrus fruits and juices, bananas, dark green leafy vegetables, legumes and fortified breads, cereals, and pasta.

Anemia can be avoided by choosing a diet that includes:

Vitamin B-12- Rich in meat and dairy products. It's also added to some cereals and soy products, such as soy milk.

Vitamin C- Foods containing vitamin C — such as citrus fruits, melons and berries help increase iron absorption.

Encourage consumption of fortified foods if available.

ACKNOWLEDGEMENTS

Authors are highly grateful to Principal Era's Lucknow Medical College and Hospital, Lucknow, U.P., India, for providing Laboratory facilities for the work presented in this research paper.

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