

A Comparative Study On Awareness And Perception About Anemia Among Urban And Rural Adolescent High School Girls

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Abstract

Background and Objectives: Nutritional anemia is a condition in which 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. To know the awareness and perception about anemia among urban and rural high school girls aged 13-16 years, to know their awareness about health impacts of anemia during growth period and pregnancy, to compare the awareness and perception on anemia between urban and rural high school girls, to study the prevalence and severity of anemia among urban and rural high school girls, to study the relationship between the severity of anemia and educational level of mother. **Methods:** A school based cross-sectional, comparative study, 650 adolescent high school girls of which 330 were from school of Bhagalpur city & 320 from schools of field practice area of Nathnagar. **Conclusion:** The present study revealed that rural adolescent girls were more aware about anemia compared to urban girls, where as both urban & rural girls had same perception about anemia. The prevalence of anemia was higher among rural girls compared to urban girls & among girls whose mother had completed primary level of education. **Keywords:** High school; Adolescent girls; anemia; awareness; perception; prevalence.

INTRODUCTION

Nutritional anemia is a condition in which 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 deficiency¹. Globally, anaemia affects 1.62 billion people (95% CI: 1.50–1.74 billion), which corresponds to 24.8% of the population (95% CI: 22.9–26.7%). The highest prevalence is in preschool-age children (47.4%, 95% CI: 45.7–49.1), and the lowest prevalence is in men (12.7%, 95% CI: 8.6–16.9%). However, the population group with the greatest number of individuals affected is non-pregnant women (468.4 million, 95% CI: 446.2–490.6)². It is reported that 2170 million people are affected worldwide by nutritional anemia. Out of these 90% live in developing countries, especially South-East Asia. The prevalence of anemia in developing countries as a whole is 36%, whereas it is only 8% in the developed countries. Thus it is disproportionately high in developing countries³. In India, according to National Health and Family Survey (NHFS-3), the prevalence of anemia among adolescent girls, 15-19 years, is 55.8% including 39.1% with mild anaemia, 14.9% with moderate anaemia & 1.7% with severe anaemia⁴. According to National Health and Family Survey (NHFS-3), the prevalence of anaemia among adolescent girls, 15-19 years, is 51.3% including 33.5% with mild anaemia, 16.5% moderate anaemia & 1.3% with severe anaemia⁵. Thus remaining as a serious public health problem and has changed little over the last several decades in spite of National Anemia Control Programme for the prevention and control of anemia among pregnant women and children. To combat anemia during adolescence, with far reaching benefits in terms of safe

motherhood and healthier future generations, an initiative called “12 by 12 initiative” was launched on 23rd April 2007 at Delhi, by Federation of Obstetrics and Gynecological society of India (FOGSI), in collaboration with Govt. of India, WHO and UNICEF⁶. The health consequences of anemia among adolescents are well documented. Anemia not only affects growth, development and learning process during adolescence but also affects the nutritional status resulting in deleterious effects in future pregnancy, especially when they are traditionally married at an early age and are exposed to a greater risk of reproductive morbidity and mortality such as increased incidence of low birth weight, fetal wastage, high perinatal mortality, infant mortality and maternal mortality, thus perpetuating a vicious cycle of health problems passing on to next generation. Girls born underweight are at risk of producing small, premature infants themselves⁷. Adolescence is the formative period of life, in the age group of 10 to 19 years, when significant growth and maturation occurs⁸. It is a time of increased demand for iron in the food, more so among girls, not only because of menstruation but also because of social factors like preference to feed more for male children, girls eating last whatever is left, being deprived of good food, workload of household chores, negligence of female children etc, making them vulnerable for the development of anemia⁹. Thus adolescent period not only constitutes a critical period for the development of anemia but also with the onset of menarche, they enter the reproductive life, constituting potential mothers. To compare their awareness and perception regarding anemia and also the relationship between anemia and the educational level of mothers, to meet the challenge of protecting their future maternal health.

Objectives

- *To know the awareness and perception about anemia among urban and rural high school girls aged 13-16 years.
- *To know their awareness about health impacts of anemia during growth period and pregnancy.
- *To compare the awareness and perception on anemia between urban and rural high school girls.
- *To study the prevalence and severity of anemia among urban and rural high school girls.

Material and Methods

It is a school based, Cross sectional, comparative study, 650 adolescent high school girls of which 330 were from school of Bhagalpur city & 320 from schools of field practice area of Nathnagar. The high school girls aged 13 to 16 years of 8th to 10th standard from government girls H.S of Bhagalpur city, government Nathnagar girls H.S of Bhagalpur & many girls H.S of Bhagalpur the source of data. Selection of schools was done by Simple random sampling and selection of students was done by systematic random sampling According to National Family Health Survey (NHFS-3), the prevalence of anemia among school going adolescent girls is 55.8%.⁴ it is rounded up to 56%. Using this data, the following formula has been applied to determine the required sample size for the study. $n = 4pq/d^2$. **Study period:** one year from Feb 2020 to Feb 2021. **Adolescent girls:** Refers to those girls who have attained menarche & are between the age group of 13-16 years studying in selected high schools of Bhagalpur city & Field practice area of Nathnagar. **Awareness:** Refers to having knowledge about various aspects of anemia, **Perception:** Refers to interpretation or impression of adolescent girls understanding of something about anemia.

Inclusion criteria

- *High school girls of 8th, 9th and 10th standard of Bhagalpur city and of field practice rural areas of the college, who are in the age group of 13 to 16 years.
- *Those girls who have attained menarche.
- *Those girls who are present on the day of data collection.
- *Those girls, who are cooperative.

Exclusion criteria

- *Girls below 13 years and above 16 years of age.
- *Those girls who have not attained menarche.
- *Those girls who are absent on the day of data collection.
- *Those girls with chronic illness and heavy menstrual disorders and those with a history of regular consumption of IFA (Iron and Folic acid) tablets in the past three months

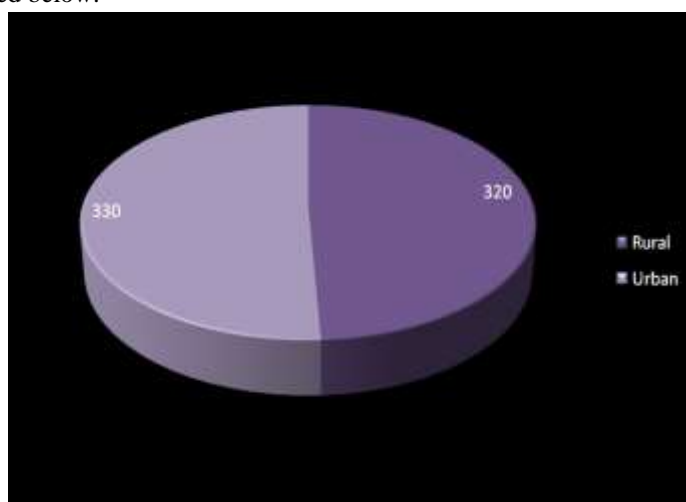
Prior permission was obtained from the school authorities for the proposed study. Sampled schools were

identified and school address was noted. Selected schools were visited on a prefixed date. Importance of the study was explained to all the girl students of 8th to 10th standards and students were encouraged to participate in the study. An empty class room was provided by the school authorities to conduct the study. The class teacher and the students were briefed regarding the purpose of the study and confidentiality was maintained. The data was collected in a predesigned, pretested, multiple response type of Questionnaire, designed for the study by interview method. The questionnaire was addressed on the topic of awareness of anemia, its health impacts and perception about anemia and also the literacy level of mothers. Every question had a response of a right answer, a wrong answer and don't know also, considering it as incorrect. All participants were studied on one day only. The study variable of anemia are about the related system, related nutrient, hemoglobin level, dietary source, cause, early features and health impacts of anemia during growth period and pregnancy and also about their perception on anemia.

It comprises a small card with six shades of red that represent that present values of Hb levels at 4,6,8,10,12 and 14 gm/dl respectively. A drop of blood, collected by finger prick with sterile, disposable lancets supplied, after cleaning the finger with spirit swab, was placed on test strip provided and waited for 30 seconds. Then the color of the blood spot was matched against one of the hues on the scale and severity was graded as per WHO standard.

RESULTS

A total of 650 adolescent girls i.e. 320 from field practice area of JLNMCH & 330 from Bhagalpur city who fulfilled the inclusion & exclusion criteria, were included in the study as shown in figure no 4. The data collected is analyzed & presented below.



Distribution of adolescent girls according to residential area.

Table:1 Distribution of adolescent high school girls by Age

Age (Years)	Rural		Urban		Total	
	No.	%	No.	%	No.	%
13	112	35.00	57	17.27	169	26.00
14	123	38.44	77	23.33	200	30.77
15	79	24.69	111	33.64	190	29.23
16	6	1.88	85	25.76	91	14.00
Total	320	100.00	330	100.00	650	100.00

Table 1 that ,age of students ranged from 13 to 16 years of which 112(35%); 123(38.44%); 79(24.69%) & 6(1.88%) were of 13, 14, 15 & 16 years respectively from rural area & 57(17.27%); 77(23.33%); 111(33.64%); 85(25.76%) were of 13,14,15,16 years from urban area.

Table 2: Distribution of adolescent high school girls by Standard

Standard	Rural		Urban		Total	
	No.	%	No.	%	No.	%
8	110	34.38	80	24.24	190	29.23
9	110	34.38	100	30.30	210	32.31
10	100	31.25	150	45.45	250	38.46
Total	320	100.00	330	100.00	650	100.00

Table 2 that out of 320 rural adolescent high school girls 110(34.38%) were from 8th standard, 110(34.38%) were from 9th standard & 100(31.25%) were from 10th standard, whereas out of 330 urban adolescent high school girls 80(24.24%) were from 8th standard, 100(30.30%) were from 9th standard & 150(45.45%) were from 10th standard.

Table 3: Percentage of Girls Who Had Heard About Anemia

Options	Rural		Urban		Total	
	No.	%	No.	%	No.	%
Yes	139	43.44	250	75.76	389	59.85
No	181	56.56	80	24.24	261	40.15
Total	320	100.00	330	100.00	650	100.00

$X^2 = 70.6$ $P < 0.001$

Table 3 that 43.44% of the rural & 75.76% of the urban adolescent girls were aware of the word anemia where as 56.56% of the rural & 24.24% of the urban girls told that they have not heard of anemia.

Table 4: Distribution of adolescent high school girls according to Awareness about related nutrient

Options	Rural		Urban		Total	
	No.	%	No.	%	No.	%
Sodium	16	5.00	14	4.24	30	4.62
Calcium	77	24.06	108	32.73	185	28.46
Iron	133	41.56	118	35.76	251	38.62
Don't Know	94	29.38	90	27.27	184	28.31
Total	320	100.00	330	100.00	650	100.00

$X^2 = 6.14$ $P = 0.10$

Table 4 that 41.56% of the rural & 35.76% of the urban adolescent girls were aware that anemia occurs due to deficiency of iron in diet, where as 24.06% of the rural & 32.73% of the urban girls told that it is due to calcium deficiency, 5% of the rural & 4.24% of the urban girls answered that it is due to sodium deficiency & 29.38% of the rural & 27.27% of the urban girls did not know which nutrient is deficient in anemia & this difference was not found statistically significant.

Table 5: Prevalence of anemia among adolescent high school girls

Anemia Grading	Rural		Urban		Total	
	No.	%	No.	%	No.	%
Normal	10	3.13	91	27.58	101	15.54
Anemic	310	96.88	239	72.42	549	84.46
Total	320	100.00	330	100.00	650	100.00

$X^2 = 74.0$ $P < 0.001$

Out of 650 girls examined, 549 were anemic at the time of study. Thus the prevalence of anaemia was 84.46%. Out of 320 rural adolescent high school girls examined, 310 were anemic with prevalence of 96.88% & out of 330 urban adolescent high school girls examined, 239 were anemic with a prevalence of 72.42%. Thus the prevalence of anaemia was more among rural adolescent girls compared to urban adolescent girls & this difference was found statistically highly significant ($p < 0.005$).

Table 6: Distribution of adolescent high school girls by Severity of Anaemia

Anemia Grading	Rural		Urban		Total	
	No.	%	No.	%	No.	%
Normal	10	3.13	91	27.58	101	15.54
Mild	174	54.38	175	53.03	349	53.69
Moderate	63	19.69	51	15.45	114	17.54
Severe	73	22.81	13	3.94	86	13.23
Total	320	100.00	330	100.00	650	100.00

$X^2 = 107.95$ $P < 0.001$

Table 6, that, out of 650 adolescent high school girls examined, 101(15.54%) were normal, 349(53.69%) were of mild degree, 114(17.54%) were moderate & 86(13.23%) were of severe degree anemic. Mild degree was almost similar 54.38% & 53.03% among rural & urban adolescent high school girls Moderate degree was predominantly more among rural adolescent high school girls 63(19.69%) compared to urban adolescent high school girls 51(15.45%)

Table 7: Relationship of severity of anaemia with educational level of mother

Education level	Anemia status				Total
	Normal	Mild	Moderate	Severe	
Illiterate	34(19.98)	96(50.79)	36(19.04)	23(12.16)	189
Primary School	27(11.68)	135(58.44)	39(16.88)	30(12.98)	231
High School	28(17.5)	80(50.0)	24(15.0)	28(17.5)	160
College	12(17.14)	38(54.28)	15(21.42)	5(7.14)	70
Total	101(15.53)	349(53.69)	114(17.53)	86(13.23)	650

$X^2 = 0.005$ $P = 0.94$

Table 7 the relationship of severity of anaemia with educational level of mothers. It was seen that mild anemia was higher among girls having mothers with primary school 135(58.44), where as moderate anemia was higher among girls with mothers having education level till college 15(21.42%) & severe anemia was higher among girls with mothers completed high school level education 28(17.5%). And this association of anaemia with mother's education was found to be statistically insignificant (p value >0.05)

DISCUSSION

Anemia is the most common form of malnutrition amongst adolescents today. It is of public health significance in our country. Adolescents constitute > 20% of our population in India & >50% suffer from Iron deficiency anemia. Both urban & rural poor suffer from anemia, being more among girls than boys. Adolescents girls awareness & perception about this major disease is comparatively very poor, thus the present study is conducted to know the awareness & perception of adolescents of bhagalpur city & field practice area of JLNMCH & Nathnagar. In our study 650 adolescent girls in the age group of 13-16 years were involved of which 330 were from urban & 320 were from rural areas. This was similar to a study conducted by Kaur. Deshmukh P R & Garg B S in rural Wardha which included a sample of 630 adolescent girls in the age group of 13-16 years⁷, where as only 308 adolescent girls were included in a study conducted by K.P Baral & S R onta with 181 from rural & 127 from urban area of Morgan district¹⁰. It was found that in our study 59.85% girls told that they were aware of anaemia, 41.56% told that anemia occurs due to iron deficiency, 71.54% were aware that anemia has an impact on growth, development & learning process in school children, where as in a study conducted by S Khedu in Moritius 90.6% of the respondents knew what the term anemia meant, 78.3% could associate anemia with micronutrient iron found in food & 86.4% were of the opinion that being anemic will reduce concentration in class¹¹. In our study 61.23% girls answered that green leafy vegetables are the main dietary source of iron where as in a study conducted by Manmeet Kaur in Chandigarh 93% women were in favour of including green leafy vegetables in diet¹². In our study 52% of the adolescents perceived that anemia occurs due to lack of knowledge about disease, 54.62% perceived that consumption of good food will help to protect against anemia & 95.69% were having the perception that they have to consult the Doctors if found anemic, where as in a study conducted by Peggy Bentley among women of four Indian states, most of the women perceived that anemia presents as weakness, dizziness, blood loss & considered poor quality of diet as major reason for that¹³ & in a study conducted by Rae Galloway et. al most of the women did not know about anemia, its causes & prevention. They described anemia as thin blood, low blood, weakness, loss of blood, headache, dizziness¹⁴. The prevalence of mild, moderate & severe anemia in our study was 53.69%, 17.54% & 13.23%, where as in study conducted by Bulliyy et al the prevalence of mild, moderate & severe anemia was 45.2%, 46.9% & 4.4% respectively¹⁵. In our study anaemia cases were found to be higher among those adolescent girls having mothers with primary education 204(88.3%), where as in a study from rural area of Meerut by CMS Rawat the prevalence of anemia was significantly higher among adolescent girls having illiterate mothers(42.2%) & just literate mothers(51.9%) & in a study done by Bahaa Abalkhail in Saudi Arabia found that anemia was significantly more prevalent among those born to low educated mothers¹⁶.

Conclusion

The present study revealed that rural adolescent girls were more aware about anemia compared to urban girls, where as both urban & rural girls had same perception about anemia. The prevalence of anemia was higher among rural girls compared to urban girls & among girls whose mother had completed primary level of education. All adolescent girls are supposed to know about anemia and its health impacts because of the menstruation process and in the interest to safeguard the future reproductive health. Adolescent Reproductive and Sexual Health [ARSH] is a key strategy under RCH II. Controlling adolescent anemia is an implementable, effective and sustainable building exercise with far reaching benefits.

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