

Research Article

# Prevalence of Anemia among Adolescent Girls in an Urban Slum Area of Kolkata

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## ABSTRACT

**Introduction:** One of the main public health issues in India is nutritional anemia. A sensitive stage in the human life cycle for the emergence of nutritional anemia is adolescence. Adolescent female anemia increases future maternal and fetal death and morbidity. Adolescent anemia prevalence is 6% in wealthy nations and 27% in impoverished nations. **Objectives:** The study was done with the objective to study the prevalence of anaemia among adolescent girls of selected urban slum of Kolkata. **Methods:** This cross sectional community based study was conducted among 100 adolescent girls in Tangra, an urban slum area of Kolkata from April 2024-June 2024. Information regarding socio-demographic and other factors was recorded in pre-designed, pre-tested proforma. Hemoglobin estimation was done by Sahli's haemoglobinometer. Data was analyzed by mean, standard deviation and chi square test. **Results:** Anaemia was present in 54% girls. Out of which 35.19% had mild, 46.30% had moderate and 18.52% had severe anaemia. Mean age of menarche was 10.64 years. 73 (73%) study participants have attained menarche and out of them 38 (52.05%) were found to be anaemic. 36% knew improper diet as a cause of anaemia followed by Vitamin deficiency (32%) and iron deficiency (27%). 34% girls did not know any cause of anaemia. Similarly 32% and 52% of study participants did not know of any symptoms and treatment of anaemia respectively. **Conclusions:** Among study participants, anemia was quite prevalent overall. All girls should receive nutrition instruction, iron folic acid pills, and dietary supplements.

**Keywords:** Prevalence of Anemia, Adolescent Girls, Urban Slum.

## INTRODUCTION

The word "adolescence," which was first used in the West in the 15th century, comes from the Latin word "adolescere," which means "Growing into maturity."<sup>1</sup>

The WHO defines adolescence as the period between the ages of 10 and 19, during which time physical development and puberty occur.<sup>2</sup> Adolescents make up nearly a fifth of the world's population, or 1.2 billion people, and their numbers are growing. There are now one billion people living in India, and almost one-fifth of them are malnourished teenagers.<sup>3-5</sup> Anaemia affects social and economic development in addition to health issues. Anemia is the second leading cause of disability worldwide and is responsible for around one million fatalities annually, with three-quarters of

those deaths taking place in South-east Asia and Africa.<sup>6</sup> Iron deficiency anemia results in 25 million disability adjusted life years (DALYs), or 2.4% of all DALYs globally, in terms of years of lost healthy life.<sup>7</sup> Girls in India frequently marry and become pregnant before their growth phase is finished, which raises their risk of anemia.<sup>8</sup> NFHS-3 reports state wise differences in prevalence of anaemia.<sup>9</sup> Rajasthan (98%) has the highest (98%) and Andhra Pradesh has the lowest rate (33%).<sup>10-11</sup> When pregnant, adolescents with anemia are at higher risk for obstetric complications. One of the top 10 factors for preterm birth, infant death, and maternal mortality, according to WHO statistics from 2002, is anemia. The prevalence of anemia during adolescence is higher in both

sexes due to growth, particularly in girls who are at risk of menarche.<sup>12</sup>

With this background the present study was conducted with the objective to study the prevalence of anaemia among adolescent girls residing in selected urban slum of Kolkata.

## METHODS

This present community based cross sectional study was carried out in Tangra, West Bengal, India, between April 2024-June 2024.

### Study Population and Sampling Technique:

The study was carried out among adolescent girls over a period of 3 months. The adolescent age group was selected as defined by WHO (10-19 years). Sample size was calculated based on a finding of a previous study in slums of Hyderabad city, which found the prevalence to be 88%.<sup>13</sup> It was decided to draw a sample of 100 subjects. A semi-structured questionnaire was used to collect information on their sociodemographic characteristics, menstruation patterns, eating habits, and understanding of anemia's origins, symptoms,

and therapy. Following the elimination of all errors, weight was measured to the nearest 100 grams using a portable manual weighing machine while wearing very little clothing and no shoes. Using a measuring tape that was affixed to the wall, height was measured in centimeters.

**Inclusion criteria:** All of the girls, age between 10 to 19, who gave consent to have their hemoglobin levels measured.

**Exclusion Criteria:** Married and pregnant adolescents were excluded from study.

Sahli's hemoglobinometer was used to estimate hemoglobin because it was practical and economical. According to WHO classification, the reference range of hemoglobin was utilized to classify anemia i.e Mild (11-11.9 g/dl); Moderate (8-10.9 g/dl); Severe (<8 g/dl).<sup>14</sup>

**Data Analysis plan:** The data was tabulated in Microsoft Excel software and analysed with SPSS V.20 software and appropriate statistical tests were employed.

## RESULTS

Table 1: Distribution of Adolescent Girls According to Severity of Anaemia (N=100)

Anaemia	Frequency	Percentage (%)
Anaemia (<12) present	54	54
Anaemia (≥12) absent	46	46
Total	100	100
Severity of Anaemia (n=54)		
Mild (11-11.9)	19	35.19
Moderate (8-10.9)	25	46.30
Severe(<8)	10	18.52

Prevalence of anaemia among study participants was found to be 54%. In our study, prevalence of moderate anaemia was higher

i.e. 46.30%, mild anaemia was 35.19% and severe anaemia was 18.52%. (Table 1)

Table 2: Distribution of Anaemia According to Various Risk Factors (N=100).

Risk factors		Anaemia present (n=54)		Anaemia absent (n=46)		P value
		No.	%	No.	%	
Age group (in years)	10-13 (early adolescence)	18	52.94	16	47.06	< 0.05
	14-16 (middle adolescence)	24	66.67	12	33.33	
	17-19 (late adolescence)	12	40.00	18	60.00	
Education	Primary	14	73.68	5	26.32	>0.05
	Middle	28	62.22	17	37.78	
	Secondary	10	35.71	18	64.29	
	College	2	25.00	6	75.00	
	Veg	16	57.14	12	42.86	

<b>Dietary Habits</b>	Non Veg	38	52.78	34	47.22	>0.05
<b>Socioeconomic status</b>	Upper middle	6	75.00	2	25.00	> 0.05
	Middle	14	70.00	6	30.00	
	Lower Middle	18	52.94	16	47.06	
	Lower	16	42.11	22	57.89	
<b>Menarche</b>	Attained	38	52.05	35	47.95	>0.05
	Not attained	16	59.26	11	40.74	
<b>BMI</b>	<18.5	26	48.15	28	51.85	>0.05
	18.5-24.99	24	66.67	12	33.33	
	>25	4	40.00	6	60.00	

The mean age of the study participants was 16.4±2.8 years. Most of the study subjects 36 (36%) belonged to the age group of 14-16 years. Majority 45 (45%) study subjects passed middle class. Dietary habit of 72 (72%) of girls were non veg. Majority of the girls belonged to

lower class 38 (38%) according to modified BG Prasad classification. Mean age of menarche was 10.64 years. 73 (73%) study participants have attained menarche and out of them 38 (52.05%) were found to be anaemic. BMI of 10 (10%) study participants was >25. (Table 2)

Table 3: Knowledge of the study participants regarding anaemia (multiple choice).

S no.	Knowledge about	Number	Percentage (%)
1	<b>Heard about anaemia</b>	68	68.00
2	<b>Causes of Anaemia</b>		
	Iron deficiency	27	27.00
	Vitamin deficiency	32	32.00
	Underlying infection	9	9.00
	Improper diet	36	36.00
	Excessive blood loss	18	18.00
	Don't know	34	34.00
3	<b>Symptoms of Anaemia</b>		
	Fatigue	34	34.00
	Weakness	62	62.00
	Dizziness/vertigo	38	38.00
	Headache	28	28.00
	Pallor	12	12.00
	Others	6	6.00
Don't know	32	32.00	
4	<b>Treatment of Anaemia</b>		
	IFA supplementation	46	46.00
	Vitamin Supplementation	32	32.00
	Balanced diet	38	38.00
	Treatment of underlying illness	18	18.00
	Don't know	52	52.00

Table 3 demonstrates knowledge regarding causes and treatment of anaemia among the study participants. 68% heard about anaemia. Among them 36% opined improper diet as a cause of anaemia followed by Vitamin

deficiency (32%) and iron deficiency (27%). 34% girls did not know any cause of anaemia. Similarly knowledge regarding symptoms and treatment of anaemia was also poor among the girls.

Figure 1: Knowledge among Study Participants Regarding Food Item Rich in Iron (Multiple Choice).

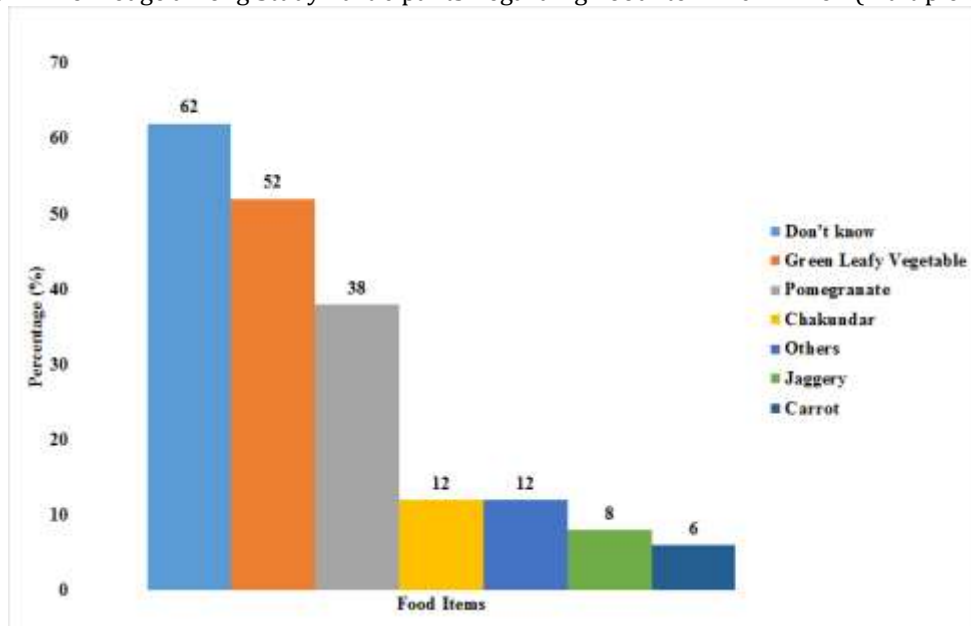


Figure 1 depicts knowledge of study subjects regarding food item rich in Iron. About 62% study participants did not know while 52% knew green leafy vegetables followed by pomegranate (38%).

## DISCUSSION

The overall prevalence of anaemia among adolescent girls in our study was found to be 54%, of which 35.19% girls had mild anaemia, 46.30% girls have moderate and 18.52% girls had severe anaemia. In a study to assess prevalence of anaemia among adolescent girls in urban area of central Madhya Pradesh by Shinde et al on 267 school girls, the overall prevalence of anaemia was found to be 52.06%, of them 70.5%, 28.06% and 1.44% girls have mild, moderate and severe anaemia respectively.<sup>15</sup>

In present study, anaemia was present in 33.33%, 44.44% and 22.22% girls in early, middle and late adolescence and p value was found to be significant Shinde et al, in their study found that 11.6% girls in early adolescence, 52.1% girls in middle adolescence and 36.3% girls in late adolescence were found to be anaemic.<sup>15</sup>

Additionally, a strong correlation between dietary variables and anemia was discovered. While Chaudhary et al.'s study of 296 teenage girls in Nagpur identified a strong correlation between anemia and socioeconomic status, mean weight, and height, our study found no correlation between anemia and socioeconomic status, menarche attainment, or BMI.<sup>16</sup>

## CONCLUSIONS

In our study we found that 54% of the teenage girls in our study had anemia overall. Study participants had relatively little knowledge of

anemia, its symptoms, causes, and therapy. Additionally, survey participants had relatively little understanding about foods high in iron. To lessen the burden of anemia among teenage girls, the high frequency of mild and moderate anemia necessitates a focus on iron and folic acid supplements, consumption of foods high in iron, health education about personal hygiene, and periodic deworming.

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**Ethical approval:** The study was approved by the institutional ethics committee

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