



Prevalence of Anemia among Adolescent Girls in selected Government Schools of Kamrup (M), Assam with a view to develop an Information Booklet

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Abstract: Background of the study: Anemia is a global public health problem which affects both the developing and the developed countries and it is an indicator of poor health with major consequences for human health, as well as for the social and economic development of a population. Particularly in developing countries, among adolescents, girls constitute a vulnerable for anemia. Anaemia causes adverse consequences as the disease progress. If the anaemic adolescent girl becomes pregnant, it may increase foetal morbidity and mortality, increase the perinatal risk, increase the incidence of Low Birth Weight (LBW), and overall increase in Infant Mortality Rate (IMR) and Maternal Mortality Rate (MMR). **Aim:** The present study was aimed to assess the Prevalence of Anemia among Adolescent Girls in selected Government Schools of Kamrup (M), Assam with a view to develop an Information Booklet. **Methodology:** This study was a cross sectional study conducted among 222 adolescent girls. After getting informed consent from the respondents and their parents, socio-demographic performa and haemoglobin were assessed. Haemoglobin level was measured for all the consented samples using a digital hemoglobinometer (Mission Hb). The data was analysed using descriptive and inferential statistics. **Result:** A total of 222 adolescent girls were screened out of which 215 (97%) were anemic and 7 (3%) were non anemic. Mild anemia was seen in 114 (51.3%), moderate anemia was seen in 86 (39%) and severe anemia was seen in 15 (6.3%). The mother's education was significantly associated with anemia (p value= 0.009). **Conclusion:** The prevalence of anemia among adolescent girl was very high; therefore there is a need for enhancement of knowledge adolescents regarding healthy diets to prevent anemia by means of booklet so as to improve and maintain the health status of adolescents and prevent the occurrence of anemia.

Key words: Adolescents, anemia, prevalence

INTRODUCTION

Anemia is a major public health issue that affects both developed and developing countries. It is a sign of poor health that can have a significant impact on human development and economic growth. At any given moment, around the world, more people are suffering from iron deficiency anemia than from any other health condition. Pregnant women, adolescents, and preschoolers are the most susceptible groups to anemia. The teenage girl is still the growing planet that never receives light or water; she is still the flower that has the potential to bloom but never does. The Latin term "adolescere," which means "to grow, to mature," is the source of the English word "adolescent." The WHO defines an adolescent as a person who is between the ages of 10 and 19 years. The greatest amount of physical, psychological, and behavioral changes occur during this formative stage of life.¹ Girls in their adolescence are acknowledged as being in a special phase of life that calls for particular care. Being an "entrant" population into parenthood, adolescence is a crucial age group. The health and nutrition of her future children are significantly influenced by her state of health throughout that time.² Girls are a particularly susceptible group among teenagers, especially in poor nations where they are typically married off at a young age and are more likely to experience reproductive morbidity and mortality.³ Adolescents are defined by the World Health Organization as a developmental stage that occurs between childhood and maturity. This stage of life is particularly susceptible to the development of nutritional anemia, which affects people of all ages and all sexes. Since childhood and adulthood are sensitive times for physiological, behavioral, and developmental changes, anemia during this formative stage of life can decrease one's ability to work, hinder pubertal and neurocognitive development, and heighten susceptibility.⁴

Anemia causes negative consequences as the disease progress. Adolescent females are impacted not just in terms of their physical development but also in terms of their memory, attentiveness, academic performance, attendance, and retention. It also delays the onset of menarche and has an impact on the immunological system, which can result in infections. Pregnancy by the anemic adolescent girl may raise the risk of preterm birth, increase the incidence of low birth weight (LBW), increase foetal morbidity and mortality, and raise the overall rates of maternal mortality rate (MMR) and infant mortality rate (IMR). Anemia during pregnancy is more severe than in older women because growing pregnant teenagers compete with the developing baby for nutrition.⁵

Objectives of the study

1. To assess the Prevalence of anemia among adolescent girls in selected government schools of Kamrup (M), Assam
2. To find out association between prevalence of anemia among adolescent girls with selected socio-demographic variables.
3. To develop an information booklet on anemia and its prevention.

Materials and method: A descriptive research design was adopted to assess the prevalence of anemia among 222 adolescent girls (from class VII, VIII, IX and X of selected government schools) of Bengali HS School, Assam Railway HS School, Pan Bazar Higher Secondary School, Dispur Govt. Higher Secondary School and T.C. Govt. HS and MP School. The investigator used multistage random sampling technique to select the samples and self administered socio-demographic questionnaire and biophysiological tool was used. The collected data were analyzed and interpreted by using descriptive and inferential statistics.

Result and Discussion

Section I: Distribution of the respondents according to the socio-demographic variables

Table 1: Frequency and percentage distribution of adolescent girls in selected government schools

n= 222

Sl. No	Socio demographic Variables	Frequency (f)	Percentage (%)
1	Age in years		
	13-14 years	126	56.8
	15-16 years	96	43.2
2	Class		
	Class VII	56	25.2
	Class VIII	57	25.7
	Class IX	52	23.4
	Class X	57	25.7
3	Type of family		
	Nuclear family	174	78.4
	Joint family	39	17.5
	Extended family	9	4.1
4	Dietary habit		
	Vegetarian	17	7.7
	Non vegetarian	200	90.1
	Vegan	5	2.3
5	Father's education		
	No formal education	20	9
	Primary school	33	14.9
	Middle school	106	47.7
	HSLC	57	25.7
	HS	4	1.8
	Graduate or above	2	0.9
6	Mother's education		
	No formal education	28	12.6
	Primary school	76	34.2
	Middle school	90	40.5
	HSLC	19	8.6
	HS	1	0.5
	Graduate or above	8	3.6
7	Father's occupation		
	Government service	30	13.5
	Private service	72	32.4

	Self employed	89	40.1
	Daily wage labourer	30	13.5
	Unemployed	1	0.5
8	Mother's occupation		
	Homemaker	140	63
	Government service	15	6.8
	Private service	24	10.8
	Self employed	24	10.8
	Daily wage labourer	19	8.6
9	Monthly family income (in Rs.)		
	≥Rs.1,84,376	9	4.1
	Rs.92,191 – Rs.1,84,370	27	12.2
	Rs. 68,967 – Rs. 92,185	5	2.3
	Rs.46,095 – Rs. 68,961	22	9.8
	Rs. 27,654 – Rs. 46,089	78	35.1
	Rs. 9,232 – Rs. 27,648	38	17.1
	≤Rs. 9,226	43	19.4
10	Previous knowledge regarding anemia		
	Yes	213	96
	No	9	4
11	Source of previous knowledge		
	Mass media	116	54.4
	Peer/family members	10	4.6
	Health workers	87	41
12	Onset of menarche		
	8-10 years	48	21.6
	11-13 years	174	78.4
13	Duration of menstrual cycle		
	Less than 21 days	24	10.8
	21-35 days	185	83.3
	Greater than 35 days	13	5.9
14	Duration of menstrual bleeding		
	Less than 5 days	29	13.1
	5 days	147	66.2
	More than 5 days	46	20.7

Table 1 shows that with regard to age, the majority of adolescent girls 126 (56.8%) belong to the age group 13-14 years, also it was found that majority of the adolescent girls 57 each class (25.7%) belong to class VIII and class X. Furthermore, it was also found that majority of the adolescent girls 174 (78.4%) belong to nuclear family. As for the dietary habit, majority 200 (90.1%) were found to be non vegetarian. In regard to the father's education the majority 106 (47.7%) had completed middle school. Similarly for the mother's education it was found that majority 90 (40.5%) had completed middle school. It was also found that majority 89 (40.1%) of the father's occupation were self employed. Similarly majority 140 (63%) of mother's occupation were homemaker. It was also found that majority 78 (35.1%) had a family income of Rs. 27,654 – Rs. 46,089. Majority 213 (96%) of the adolescents had previous knowledge of anemia from which majority 116 (54.4%) gained through mass media. It was also found that majority 174 (78.4%) had their menarche around the age of 11-13 years. Majority 185 (83.3%) had their duration of menstrual cycle between 21-35 days. Also majority 147 (66.2%) was found to have a duration of menstrual bleeding for 5 days..

Section II: Distribution of the respondents according to the prevalence of anemia

Table 2: Frequency and percentage distribution of the respondents in relation to prevalence of anemia

n = 222

Prevalence of anemia	Frequency (f)	Percentage (%)
No anemia (≥ 12.0 g/dl)	7	3
Mild anemia (11.0-11.9g/dl)	114	51.3
Moderate anemia (8.0-10.9g/dl)	86	39
Severe anemia (<8g/dl)	15	6.7

Table 2, it is observed that majority 114 (51.3%) have mild anemia followed by 86 (39%) have moderate anemia, 15 (6.7%) have severe anemia and only 7 (3%) have no anemia.

n = 222

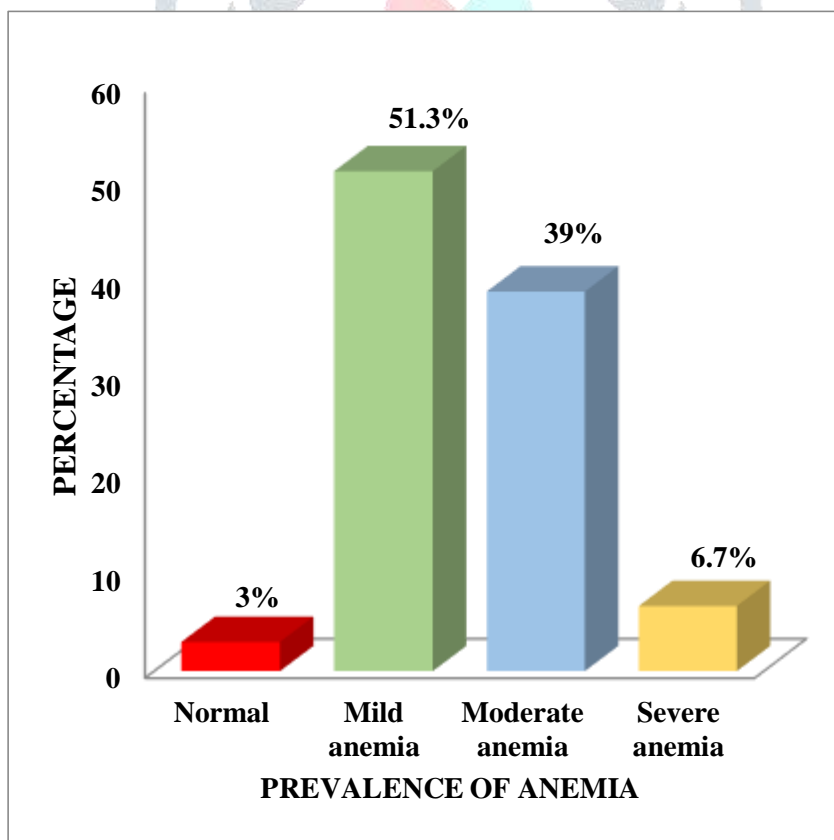


FIG: BAR DIAGRAM REPRESENTING DISTRIBUTION OF RESPONDENTS IN RELATION TO PREVALENCE OF ANEMIA

Section III: Association between prevalence of anemia among adolescent girls with socio-demographic variables

Table 3: Association between prevalence of anemia among adolescent girls with socio-demographic variables

n = 222

Socio-demographic variables	Prevalence of Anemia				χ^2 / Fischer's exact value	df	p value
	No anemia	Mild	Moderate	Severe			
Age in years							
13-14 years	5	63	51	7	1.567	3	0.667 ^{NS}
15-16 years	2	51	35	8			
Class							
Class VII	2	30	20	4			

Class VIII	3	29	23	2	4.940	9	0.851 ^{NS}
Class IX	1	27	18	6			
Class X	1	28	25	3			
Type of Family							
Joint family	5	90	65	14			
Nuclear family	2	20	16	1	3.028	6	0.725 ^{NS}
Extended family	0	4	5	0			
Dietary pattern							
Vegetarian	0	8	7	2			
Non vegetarian	6	103	79	12	8.925	6	0.113 ^{NS}
Vegan	1	3	0	1			
Father's education							
No formal education	1	13	5	1			
Primary school	2	20	10	1	18.76	15	0.171 ^{NS}
Middle school	4	54	40	8			
HSLC	0	25	29	3			
HS	0	1	2	1			
Graduate or above	0	1	0	1			
Mother's education							
No formal education	2	17	7	2			
Primary school	1	40	33	2	29.60	15	0.009*
Middle school	2	40	42	6			
HSLC	1	11	3	4			
HS	0	0	1	0			
Graduate or above	1	6	0	1			
Father's occupation							
Government service	1	12	13	4			
Private service	3	39	25	5	10.678	12	0.234 ^{NS}
Self employed	1	46	38	4			
Daily wage labourer	2	17	10	1			
Unemployed	0	0	0	1			
Mother's occupation							
Homemaker	5	73	55	7			
Government service	0	9	6	0	10.29	12	0.509 ^{NS}
Private service	0	12	8	4			
Self employed	0	10	11	3			
Daily wage labourer	2	10	6	1			
Monthly family income							
≥Rs.184,376	1	6	2	0			
Rs.92,191 – Rs.184,370	3	14	7	3	17.71	18	0.378 ^{NS}
Rs.68,967 – Rs.92,185	0	3	1	1			
Rs.46,095 – Rs.68,961	0	14	8	0			
Rs.27,654 – Rs.46,089	1	39	33	5			
Rs.9232 – Rs.27648	2	17	16	3			
≤Rs.9226	0	21	19	3			
Previous knowledge regarding anemia							
Yes	7	110	82	14	1.121	3	0.662 ^{NS}
No	0	4	4	1			
If yes, Source of previous knowledge (n = 213)							
Mass media	5	63	37	11	6.952	6	0.239 ^{NS}
Peer / Family members	0	6	4	0			
Health workers	2	41	41	3			
Onset of menarche							
8-10	0	22	24	2	3.363	3	0.243 ^{NS}
11-13	7	92	62	13			
Duration of menstrual							

cycle							
Less than 21 days	1	15	5	3	6.909	6	0.275 ^{NS}
21 – 35 days	5	93	75	12			
Greater than 35 days	1	6	6	0			
Duration of menstrual bleeding:							
Less than 5 days	1	17	11	0			
5 days	3	75	59	10	6.129	6	0.351 ^{NS}
More than 5 days	3	22	16	5			

p value<0.05 level of significance

NS- Non significant

Table 3 depicts the association between prevalence of anemia among adolescent girls with socio-demographic variables. It was found that only mother's education ($\chi^2= 29.60$, p-value = 0.009) showed significant association and the rest of the socio-demographic variables were found to be non significant.

The present study was conducted to assess the prevalence of anemia among adolescent girls in selected government schools. The research design adopted for this study is descriptive research design. 222 adolescent girls were selected using multistage random sampling technique. The data collected for the study were analysed statistically and discussed based on the objectives.

The objective was to assess the prevalence of anemia among adolescent girls in selected government schools of kamrup(M), Assam

It was observed in the study that majority 114 (51.3%) have mild anemia followed by 86 (39%) have moderate anemia, 15 (6.7%) have severe anemia and only 7 (3%) have no anemia.

The present study is supported by the similar study conducted by **Rajoura SM, Rajoura OP and Honnakamble RA (2019)**⁶ revealed similar findings that is prevalence of anemia (203) 96.7% (out of which (93) 44.3% had mild anemia, (101) 48.1% had moderate anemia, and (9) 4.3% had severe anemia). Similarly another study conducted by **Prasanta N and et al (2020)**⁷ showed similar result with prevalence of anemia 80.70%.

The objective was to assess the association between prevalence of anemia among adolescent girls with selected socio-demographic variables

In the present study, association was found between prevalence of anemia among adolescent girls with mother's education (p=0.009). However, there was no significant association between prevalence of anemia with other socio-demographic variables.

The present study is supported by a study conducted by **Rana S, Kumar R, Anand N and Hussain S (2023)**⁸ which also found significant association with mother's education (0.001).

The objective was to develop an information booklet

CONCLUSION

The study was conducted to determine the prevalence of anemia among adolescent girls in selected government schools of Kamrup (M), Assam with a view to develop an information booklet. The findings indicated that the majority of the teenage females had mild anemia, out of the total number of anemic girls. Additionally, results showed a significant association between the mother's educational status and the prevalence of anemia. The high incidence of anemia in adolescent schoolgirls raises serious concerns because it can lead to increased rates of morbidity and death in the future for both mothers and newborns. In order to improve and maintain the health status of adolescents and avoid the emergence of anemia, it can be predicted that there is a need to increase the understanding of adolescents and their mothers regarding healthy lifestyle choices to prevent anemia through the use of information booklets.

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