

A DESCRIPTIVE STUDY TO ASSESS THE PREVALENCE OF ANEMIA AMONG SCHOOL-GOING CHILDREN IN SELECTED SCHOOLS OF MEERUT

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ABSTRACT

Introduction: Anemia is one of the most prevalent nutritional disorders among children and remains a significant public health problem in developing countries. It adversely affects physical growth, cognitive development, immunity, and academic performance. School-going children are particularly vulnerable due to increased nutritional demands during growth.

Objective: To assess the prevalence of anemia among school-going children in selected schools of Meerut and determine its association with selected demographic variables.

Methodology: A quantitative descriptive cross-sectional research design was adopted. The study included 400 school-going children aged 6–14 years were selected through Non probability convenience sampling technique. Data were collected using a demographic questionnaire and hemocue device for hemoglobin estimation. Descriptive and inferential statistics were used for data analysis.

Results: Among 400 participants, 271 (67.75%) were non-anemic, 70 (17.5%) had mild anemia, 35 (8.75%) had moderate anemia, and 24 (6%) had severe anemia. Significant associations were found between anemia and religion ($\chi^2 = 34.17$, $p = 0.0008$) and socio-economic status ($\chi^2 = 69.67$, $p < 0.001$). No significant association was observed between anemia and age, gender, type of family, parental education, family income, or type of diet.

Conclusion: Anemia remains a significant public health concern among school-going children in Meerut. Regular screening, nutrition education, and strengthening school health services are essential to reduce the burden of anemia.

KEYWORDS: Anemia, School-going Children, Hemoglobin, Prevalence, Meerut.

INTRODUCTION

Anemia is defined as a condition in which the hemoglobin concentration in the blood is lower than normal, resulting in reduced oxygen-carrying capacity of red blood cells. It is one of the most widespread nutritional disorders globally and disproportionately affects children and adolescents. Iron deficiency is the most common cause of anemia, although deficiencies of folic acid, vitamin B12, chronic infections, and genetic disorders also contribute to its development. School-going children represent a vulnerable group because of rapid physical growth, increased nutritional requirements, and exposure to infections. Anemia during childhood can impair physical growth, cognitive development, attention span, memory, and academic performance. Despite implementation of national health programs such as the Weekly Iron and Folic Acid Supplementation Programme and National Iron Plus Initiative, anemia remains highly prevalent in India.

According to the World Health Organization (WHO), approximately 1.62 billion people are affected by anemia globally, representing nearly 24.8% of the world's population.

In India, anemia continues to be a significant health problem among children and adolescents. The National Family Health Survey (NFHS-5) reported that a substantial proportion of children suffer from anemia, indicating that the burden remains high despite various national nutritional programs. Studies conducted in different regions of India have reported anemia prevalence ranging from 40% to 70% among school-aged children, highlighting regional variations influenced by dietary habits, socio-economic status, educational level of parents, and access to healthcare services.

In Uttar Pradesh, anemia remains highly prevalent among school-going children. Previous studies conducted in Meerut and surrounding districts have reported anemia prevalence rates above 50%, suggesting that nutritional deficiencies continue to affect child health and development.

OBJECTIVES OF THE STUDY WERE:

1. To assess the prevalence of anemia among school-going children.
2. To determine the association between anemia and selected demographic variables.

METHODOLOGY**Research Approach:**

A quantitative research approach was adopted.

Research Design:

Descriptive cross-sectional research design.

Setting:

Selected schools of Meerut, Uttar Pradesh.

Population:

School-going children aged 6–14 years.

Sample Size:

400 school-going children.

Sampling Technique:

Non probability convenience sampling.

Inclusion Criteria:

- Children aged 6–14 years.
- Students enrolled in selected schools.
- Children whose parents provided informed consent.

Exclusion Criteria:

- Children with known blood disorders.
- Children suffering from severe illness during data collection.

Data Collection Tool:

Section A – Demographic variables.

Section B – Hemoglobin estimation using hemocue device.

Statistical Analysis:

Descriptive statistics including frequency and percentage were used. Chi-square test was employed to identify associations between anemia and demographic variables.

RESULT: The findings of the study are presented according to the objectives of the study. The data is prepared under the subsequent sections.

SECTION-1 Distribution of selected demographic variables among children.

Table 1.1: Distribution of Participants According to Demographic Variables (N=400)

Demographic variables	Background information	Frequency (f)	Percentage (%)
Age (In years)	6-8	80	20%
	9-11	130	32.50%
	12-14	190	47.50%
Gender	Male	180	45%
	female	220	55%
	Other	0	0%
Religion	Hindu	210	52.50%
	Muslim	168	42%
	Sikh	12	3%
	Christian	10	2.50%
Type of Family	Nuclear	240	60%
	Joint	140	35%
	Extended	20	5%
Father's education	Illiterate	56	14%
	Primary	86	21.50%
	Secondary	176	44%
	graduate	82	20.50%
	Illiterate	87	21.75%

Mother's education	Primary	122	30.50%
	Secondary	113	28.25%
	Graduate	78	19.50%
Family Income	<10,000	40	10%
	10,000-20,000	190	47.50%
	20,001-50,000	166	41.50%
	>50,000	4	1%
Socio-economic status	Lower	40	10%
	Middle	346	86.50%
	Upper	14	3.50%
Place of residence	Urban	0	0%
	Rural	400	100%
	slum	0	0%
Type of diet	Vegetarian	140	35%
	Mixed	260	65%

SECTION-II Frequency percentage distribution of prevalence of anremia among among children.

Table 1.2: Frequency percentage distribution of prevalence of anremia among among children. (N=400)

Category	Frequency (f)	Percentage (%)
Normal	271	67.75%
Mild	70	17.5%
Moderate	35	8.75%
Severe	24	6%

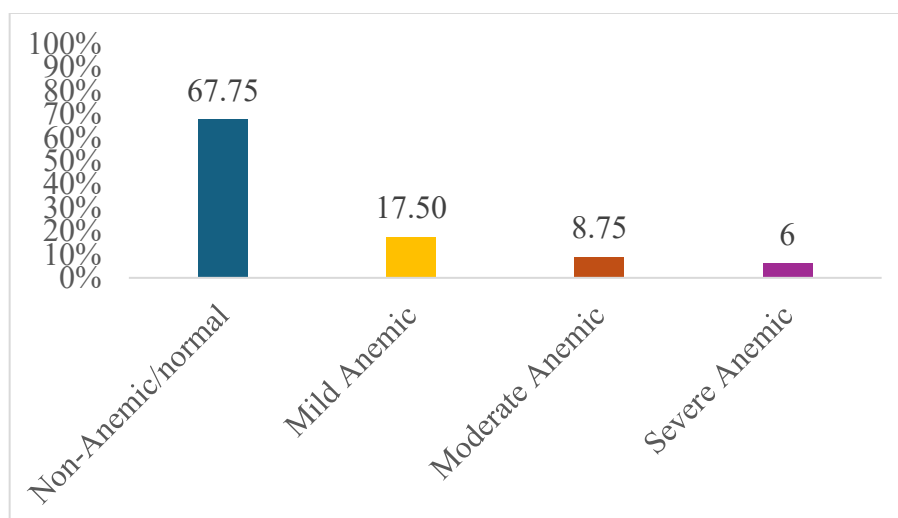


Figure: 1 Frequency percentage distribution of prevalence of anemia among among children.

SECTION-III Association Between Anemia and Selected Demographic Variables

Table 1.3: description of Association Between Anemia and Selected Demographic Variables (N=400)

Variable	Non-Anemic	Mild Anemic	Moderate Anemic	Severe Anemic	df	Chi-square value	p-value	inference
AGE IN YEARS								
6-8	56	15	5	4	6	3.24	0.77	NS
9-11	92	22	9	7				
12-14	123	33	21	13				
GENDER								
MALE	127	28	16	9	3	1.64	0.65	NS
FEMALE	144	42	19	15				
OTHER	0	0	0	0				
RELIGION								

HINDU	145	35	20	10	9	34.17	0.0008	S
MUSLIM	119	27	10	12				
CHRISTIAN	1	8	2	1				
SIKH	6	0	3	1				
TYPE OF FAMILY								
NUCLEAR	161	43	23	13	6	9.56	0.14	NS
JOINT	96	25	12	7				
EXTENDED	14	2	0	4				
NUCLEAR	161	43	23	13				
FATHER EDUCATION LEVEL								
ILLITERATE	43	8	3	2	9	6.47	0.69	NS
PRIMARY	54	19	9	4				
SECONDARY	115	31	18	12				
GRADUATE	59	12	5	6				
MOTHER EDUCATION LEVEL								
ILLITERATE	67	12	4	4	9	14	0.12	NS
PRIMARY	90	17	10	5				
SECONDARY	69	23	14	7				
GRADUATE	45	18	7	8				
FAMILY INCOME								
<10000	29	6	3	2	9	2.48	0.98	NS
10001-20000	129	32	19	10				
20001-50000	110	31	13	12				
>50000	3	1	0	0				
SOCIO-ECONOMIC STATUS								
LOWER	5	15	11	9	6	69.67	0.00	S
MIDDLE	254	53	24	15				
UPPER	12	2	0	0				
PLACE OF RESIDENCE								
URBAN	0	0	0	0	--	--	--	NA*
RURAL	100	100	100	100				
SLUM	0	0	0	0				
TYPE OF DIET								
VEG	95	23	15	7	3	1.45	0.69	NS
MIXED	176	47	20	17				

A total 400 children participated in the study, The majority of the participants belonged to the age group of 12–14 years (47.5%), followed by 9–11 years (32.5%) and 6–8 years (20%). More than half of the participants were females (55%), while males constituted 45% of the sample. Regarding religion, the majority were Hindus (52.5%), followed by Muslims (42%), Sikhs (3%), and Christians (2.5%). Most of the children belonged to nuclear families (60%), followed by joint families (35%) and extended families (5%). Concerning parental education, 44% of fathers had secondary education, whereas 30.5% of mothers had primary education. Nearly half of the families (47.5%) had a monthly income between ₹10,000 and ₹20,000. The majority of participants belonged to the middle socio-economic class (86.5%), while 10% belonged to the lower class and 3.5% to the upper class. All participants (100%) were from rural areas. With regard to dietary habits, the majority of children (65%) consumed a mixed diet, while 35% followed a vegetarian diet. These findings indicate that most participants were rural school children from middle socio-economic backgrounds and nuclear families. The Chi-square test revealed a statistically significant association between anemia and religion ($\chi^2 = 34.17$, $p = 0.0008$) as well as socio-economic status ($\chi^2 = 69.67$, $p < 0.05$). However, no significant association was found between anemia and age ($p = 0.77$), gender ($p = 0.65$), type of family ($p = 0.14$), father's education ($p = 0.69$), mother's education ($p = 0.12$), family income ($p = 0.98$), or type of diet ($p = 0.69$). Place of residence could not be analyzed statistically because all participants belonged to rural areas. The findings indicate that religion and socio-economic status were important factors associated with the prevalence of anemia among the study participants.

DISCUSSION

The present study revealed that 32.25% of school-going children were affected by anemia. Although the majority of children were non-anemic, a considerable proportion exhibited mild, moderate, and severe anemia. These findings indicate that anemia continues to be a major nutritional problem among children in Meerut.

The prevalence observed in the present study is comparable with studies conducted in various parts of India that reported anemia prevalence ranging from 40% to 70% among school-aged children. The significant association between socio-economic status and anemia highlights the influence of poverty and limited access to nutritious food. Similarly, the association with religion may reflect differences in dietary practices and socio-cultural factors.

No significant association was found with age, gender, parental education, family income, and dietary pattern. Similar findings have been reported in selected regional studies where anemia was influenced by multiple interacting factors rather than a single demographic characteristic.

NURSING IMPLICATIONS

Nursing Education: Nursing curricula should emphasize nutritional assessment, anemia prevention, and child health promotion.

Nursing Practice:

School health nurses should conduct regular hemoglobin screening, nutritional counseling, and health education programmes.

Nursing Administration:

Healthcare administrators should strengthen school health services and ensure adequate availability of iron and folic acid supplements.

Nursing Research:

Further studies with larger samples and longitudinal designs are recommended to identify causal factors and evaluate intervention effectiveness.

RECOMMENDATIONS

- Regular anemia screening in schools.
- Periodic deworming programmes.
- Nutrition education for students and parents.
- Promotion of iron-rich dietary practices.
- Strengthening iron and folic acid supplementation programmes.
- Community awareness campaigns regarding anemia prevention.

LIMITATIONS

- Study limited to selected schools of Meerut.
- Findings cannot be generalized to all children.
- Hemoglobin estimation alone was used for diagnosis.
- Cross-sectional design does not establish causality.

CONCLUSION

The present study concluded that anemia remains an important public health problem among school-going children in Meerut. Approximately one-third of the participants were found to be anemic. Significant associations were observed with religion and socio-economic status. Early detection, nutritional interventions, and strengthening school health programmes are essential for reducing the burden of anemia and improving the overall health and academic performance of children.

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