

PREVALENCE AND PROFILE OF SEVERE ANAEMIA IN CHILDREN AGED 1 MONTH TO 14 YEARS ATTENDING TERTIARY CARE HOSPITAL

P. Indira¹, S. Pratimadevi², J. Rajkumar³

¹Associate Professor, Department of Paediatrics, Andhra Medical College, Visakhapatnam, Andhra Pradesh, India.

²Associate Professor, Department of Paediatrics, VIMS, Visakhapatnam, Andhra Pradesh, India.

³Postgraduate Student, Department of Paediatrics, Andhra Medical College, Visakhapatnam, Andhra Pradesh, India.

ABSTRACT

BACKGROUND

Anaemia is widely prevalent and is a major cause of morbidity. Globally anaemia affects 1.62 billion people which correspond to 24.8% of the population.⁽¹⁾ The highest prevalence is seen in preschool-age children (47.4%), and the lowest prevalence is seen in men (12.7%). Various surveys including the National Family Health Survey (NFHS) have revealed that anaemia is highest in children 6–35 months of age. It is more common in rural areas as compared to urban population.⁽²⁾ Children, particularly infants living in developing countries are highly vulnerable to infectious diseases. Anaemia is widespread throughout India. Anaemia in young children is a serious concern because it can result in impaired cognitive performance, behavioural and motor development, coordination, language development, and scholastic achievement, as well as increased morbidity from infectious diseases.⁽³⁾ In addition children may develop lymph node enlargement, petechiae, ecchymosis or bleeding symptoms.⁽⁴⁾

MATERIALS AND METHODS

It is a descriptive study of 200 children aged 1 month to 14 years, attending Department of Paediatrics. KGH, Vizag, with anaemia. Those with severe anaemia were subjected for further evaluation. All lab investigations pertaining to anaemia are done to know the prevalence of anaemia, various aetiological factors, distribution of anaemia by age and sex. Anaemia was diagnosed according to the World Health Organization (WHO) standard for the given age. Data was analysed and interpreted using descriptive and inferential statistics.

RESULTS

Prevalence of anaemia in males is 53.6%, females is 46.3%, and prevalence of anaemia is more in males than in females in 0-12 yrs. age group. Significant history of presenting illness includes fever, pallor, which are the most common, and abdominal mass, history of previous transfusion, jaundice, siblings with similar complaints, facial puffiness, cough, respiratory distress and history suggestive of worm infestation are also seen. Most common positive examination finding in children with anaemia is splenomegaly followed by hepatomegaly. Jaundice, oedema, clubbing, lymphadenopathy, signs of tuberculosis, respiratory distress and signs of renal disease are other most common findings. Aetiological diagnosis in children aged 0-12 yrs. with anaemia are, malaria 31% thalassemia 18%, sickle cell anaemia 11%, iron deficiency anaemia 11%, anaemia of chronic disease 7%, sickle thalassemia 3%, malignancies 3%, sepsis 3%, dengue 2%, nephrotic syndrome 2%, dimorphic anaemia 2%, aplastic anaemia 2%, thalassemia intermedia 2% and others 4%. 9. Prevalence of history of requirement of transfusion in the present study is 50.7% and children who need more than one transfusion or those requiring regular transfusions is 32%.

CONCLUSION

- Anaemia is the most common co-morbid condition in children, with malaria, haemoglobinopathies and iron deficiency anaemia as the most common causes.
- Prevalence of anaemia and severe anaemia is more common after 6 years and is more common in girls.

KEY WORDS

Anaemia, Male, Female, Severity, Clinical Features, Blood Transfusions.

HOW TO CITE THIS ARTICLE: Indira P, Pratimadevi S, Rajkumar J. Prevalence and profile of severe anaemia in children aged 1 month to 14 years attending tertiary care hospital. *J. Evolution Med. Dent. Sci.* 2019;8(06):385-388, DOI: 10.14260/jemds/2019/85

BACKGROUND

Anaemia, reduction in haemoglobin in the peripheral blood which is below normal for age and sex, is the cause for morbidity and in some cases mortality in children.⁽⁵⁾ Anaemia in most cases is preventable and treatable.

'Financial or Other Competing Interest': None.

Submission 13-12-2018, Peer Review 25-01-2019,

Acceptance 01-02-2019, Published 11-02-2019.

Corresponding Author:

Dr. P. Indira,

Plot No. 26, Palace Compound,

Pedawaltair, Visakhapatnam-17,

Andhra Pradesh, India.

E-mail: indiraguda07@gmail.com

DOI: 10.14260/jemds/2019/85



Anaemia, in addition to morbidity from infectious diseases, impairs cognitive, behavioural, motor, coordination, language development and scholastic performance⁽⁶⁾ and is treatable in most cases. Anaemia is widespread in India and more in rural areas. In Andhra Pradesh, prevalence of anaemia in children is 70.8 % (mild), 43.5% (moderate), and 3.6 % (severe). (NFHS-3) Anaemia is an indicator of nutritional status & it usually results from deficiency of iron and vitamin B12 & others.⁽⁷⁾ May contribute to excess cardiovascular or respiratory work.

Aims & Objectives

- To determine the prevalence of severe anaemia.
- Various etiological factors.
- Distribution of anaemia among male and female sex.
- Distribution of anaemia in various age groups.

Total No. of Cases Studied

200.

Duration of Study

1 Year.

MATERIALS AND METHODS

The descriptive study of Children from 1 month to 14 years attending the Department of Paediatrics. KGH, Vizag with anaemia were taken into study. Those with severe anaemia were subjected for further evaluation. All lab investigations pertaining to anaemia are done.

Few of them were-

- CBC- Hb %
- TC.
- DC.
- ESR.
- Platelet count.
- Peripheral smear.
- Reticulocyte count.
- MCV and other RBC Indices.
- Iron studies.
- Haemoglobin electrophoresis.
- Bone marrow aspiration and Biopsy.
- S. Creatinine.
- Thyroid & Liver Function tests.
- G6PD Screen.
- Osmotic fragility test.
- Smear for M. P.
- QBC for M. P.

RESULTS

Age in Years	No. of Patients	Percentage
1 Month-1 Year	41	20.50%
1 Year -5 Years	77	38.50%
5 Years -14 Years	82	41%
Total	200	100%

Table 1. Prevalence of Severe Anaemia in Different Age Groups in Children

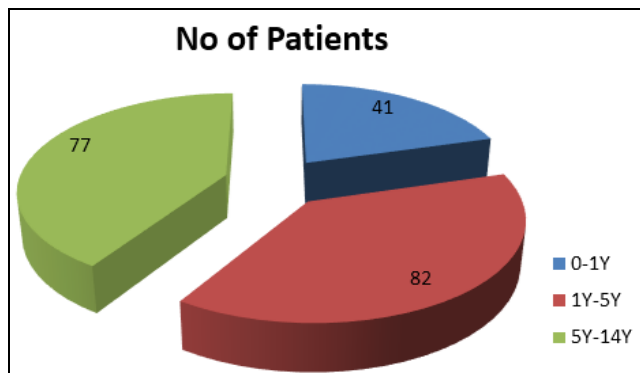


Figure 1. Above Pie Chart Showing Prevalence of Anaemia in Different Age Groups in Present Study

Prevalence of anaemia in children aged 1 month to 1 year is 20.5%, 1-5-year age group is 38.5% and in 5-14 year age group is 41%. In this study Prevalence of anaemia is more in children aged 5-14 years, followed by 1-5 year age group and 1 month – 1 year age group.

	Male	Female	Total
1 Month-1 Year	23	18	41
1 Year- 5 Years	43	34	77
5 Years -14 Years	48	34	82

Table 2. Prevalence of Anaemia by Age and Sex

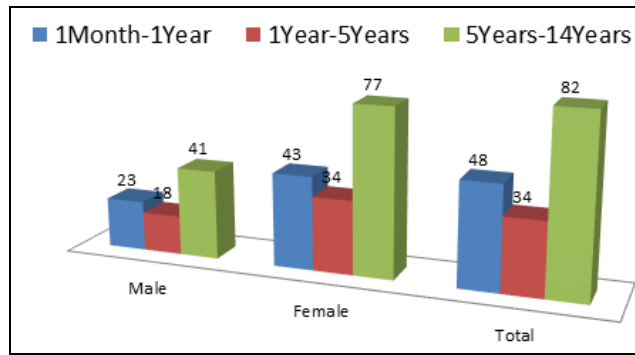


Figure 2. Prevalence of Anaemia by Age and Sex

Prevalence of severe anaemia in male children in the age group of 1 month to 1 year is 11.5% and in female children of 9%. In children in the age in the age group of 1 year to 5 years Prevalence of severe anaemia in males is 21.5% and in female children is 17%. And Prevalence of severe anaemia in the age group of 6 to 14 years is 24% and in females is 17%.

	Mild	Moderate	Severe	Total
Male	16 (57.1%)	47 (52.2%)	44 (53.6%)	107
Female	12 (42.8%)	43 (47.7%)	38 (46.3%)	93
Total	28	90	82	200

Table 3. Prevalence of Severity of Anaemia by Sex

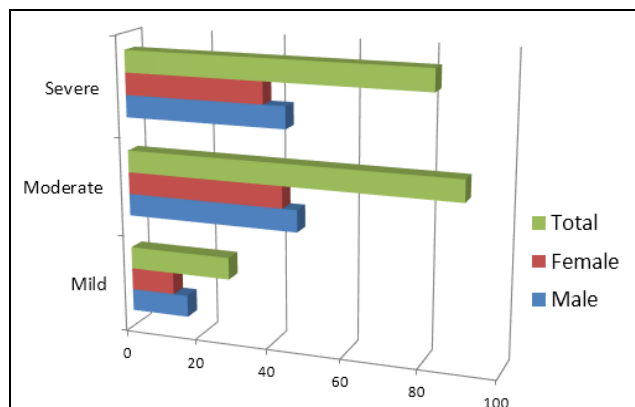


Figure 3

In children, male children are more commonly found to be with all degrees of mild, moderate and severe anaemia when compared to female children.

Splenomegaly	104
Hepatomegaly	75
Jaundice	8
Oedema	9
Clubbing	7
Lymphadenopathy	3
Signs of tuberculosis	11
Signs of renal disease	2
Respiratory distress	23

Table 4. Positive Examination Findings in Children with Anaemia

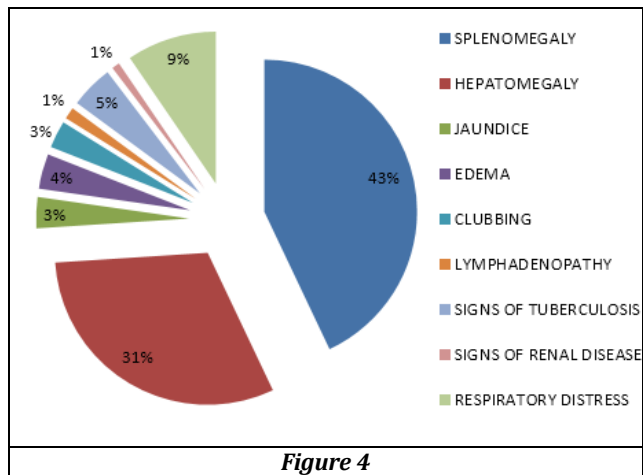


Figure 4

The most common positive examination finding in children with severe anaemia is splenomegaly followed by hepatomegaly. Both hepatomegaly and splenomegaly is also there in a significant number of cases and in some jaundice is also found in association.

Aetiological Factor	Percentage
Malaria	31%
Thalassemia	18%
Iron Deficiency Anaemia	11.00%
Sickle Cell Anaemia	11%
Anaemia of Chronic Disease	7%
Sickle Beta Thalassemia	3%
Others	4.00%
Malignancies	3%
Septicaemia	3%
Dengue	2%
Nephrotic Syndrome	2%
Dimorphic Anaemia	2%
Thalassemia Intermedia	2%
Aplastic Anaemia	2%
HDN	1.00%

Table 5. Aetiological Diagnosis In Children With Severe Anaemia

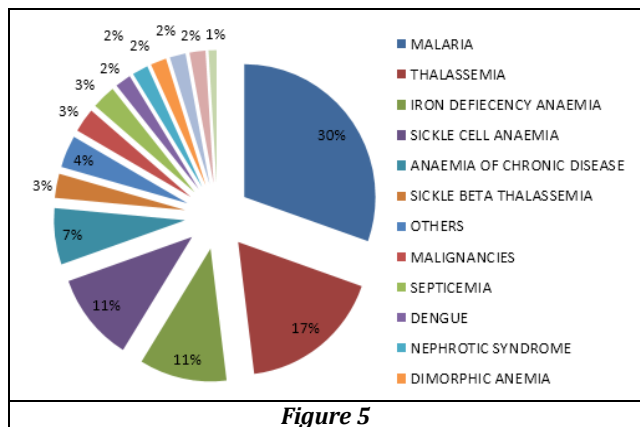


Figure 5

In this study, Malaria is the most common etiological factor in 31 % of children, Thalassemia in 18%, Iron Deficiency Anaemia in 11%, Sickle Cell Anaemia in 11%, Anaemia of Chronic Disease in 7%, Sickle Beta Thalassemia in 3%, Malignancy in 3%, Septicaemia in 3%, Dengue in 2%, Nephrotic Syndrome in 2%, dimorphic anaemia⁽⁸⁾ in 2%, Aplastic Anaemia in 2%, HDN 1 % and others 4%. Others include Failure to Thrive, Aspiration Pneumonia,

Bronchiolitis, Pneumonia, Empyema, Chronic Lung Disease, Clotting Disorders, Hydrocephalus, Viral Hepatitis, HIV infection. These might not be the definitive aetiology of severe anaemia rather the morbidity that contributed to the pathology severe anaemia is found in association with these diseases in some cases.

Gender	Receiving Blood Transfusions
Male	37
Female	28
Total	64

Table 6. Children with Severe Anaemia Who Are in Need of Multiple Blood Transfusions

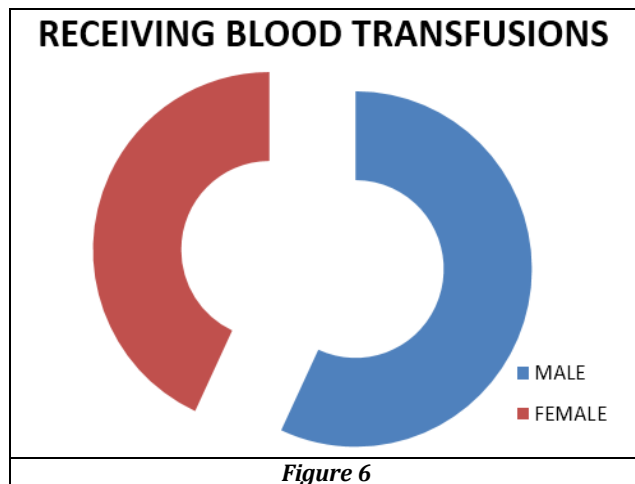


Figure 6

Out of 200 children in the study group, children with hemoglobinopathies who are in need of multiple blood transfusions in males is 18.5% in the study group. Female children are 14%. Thalassemia is the most common etiological factor.

DISCUSSION

Anaemia is an important nutritional problem encountered in children. The present study was undertaken in 250 school children in the age group of 8 to 14 years to study the prevalence of anaemia and to study the association of certain risk factors with the prevalence of Anaemia.

CONCLUSION

- Anaemia is the most common co-morbid condition in children, with malaria, hemoglobinopathies, and iron deficiency anaemia is the most common cause.
- Prevalence of anaemia and severe anaemia is more common after 6 years and is more common in girls.
- Malaria and haemoglobinopathies are the most common causes in any age group.
- Most common presenting complaint is fever followed by pallor.
- Most common finding on examination is hepatosplenomegaly.
- Most of the causes of severe anaemia are preventable and readily treatable⁽⁹⁾ in most cases and IFA prophylaxis and early treatment of infectious diseases play a major role in the current scenario.

Preventive measures to decrease the severity of illness⁽¹⁰⁾

- Strengthening of primary health care in early screening of anaemia.
- Screening for sickling in secondary health care facilities.
- High index of suspicion and primary investigation for haemoglobinopathies in children with anaemia.
- Prevention of vector borne disease predisposing to anaemia.
- Effective treatment of malaria with radical therapy in indicated cases.
- Iron supplementation for children with IDA and antihelminthic measures for hook worm infestation.
- Education of parents regarding nutrition.

REFERENCES

- [1] Vinaykumar, Abbas A, Fausto N, et al. Robbins and Cotran Pathologic basis of disease. 8th edn. Elsevier Saunders 2009.
- [2] Koch WC. Parvovirus B19. In: Behrman RE, Kliegman RM, Jenson HB, eds. Nelson Textbook of Pediatrics. 16th edn. Philadelphia: Saunders 2000: p. 964-6.
- [3] Schwartz E. Anaemias of inadequate production. In: Behrman RE, Kliegman RM, Jenson HB, eds. Nelson Textbook of Pediatrics. 16th edn. Philadelphia: Saunders 2000: p. 1463-72.
- [4] Nelson WE, Behrman RE, Kliegman R, Nelson Textbook of pediatrics. 15th edn. Philadelphia: W.B Saunders 1996: p. 1399.
- [5] Segel GB. Enzymatic defects. In: Behrman RE, Kliegman RM, Jenson HB, eds. Nelson Textbook of Pediatrics. 16th edn. Philadelphia: Saunders 2000: p. 1488-91.
- [6] Irwin JJ, Kirchner JT. Anaemia in children. Am Fam Physician 2001;64(8):1379-87.
- [7] Subrahmanyam S, Aparna. "Development of Agriculture in Andhra Pradesh", Background paper. Andhra Pradesh Human Development Report, CESS, Hyderabad. 2007.
- [8] Nathan DG, Orkin SH, Oski FA, et al. Nathan and Oski's Hematology of infancy and childhood. 5th edn. Philadelphia: Saunders 1998: p. 382.
- [9] Agarwal B, Pedicon B. Etiologic classification and major diagnostic features of anaemia in children. 2005.
- [10] Ritu S, Ashok D, Vithal TP, et al. A hospital based study on anaemia prevalence in children of an Indian Island. Int J Paediatrics 2017;5(12):6245-52.