

Prevalence of Anaemia among Patients attending Central Laboratory at a Tertiary Care Centre in Nepal

Krishna Kumar Jha^{1*}, Dipesh Regmi²

¹Department of Pathology, Karnali Academy of Health Sciences, Nepal, ²Central Laboratory, Rapti Academy of Health Sciences, Nepal

ARTICLE INFO

Article history:

Received: 17 Jan 2021

Revised: 27 April 2021

Accepted: 21 May 2021

*Correspondence:

Dr. Krishna Kumar Jha,
Karnali Academy of Health
Sciences, Jumla, Nepal

E-mail:

jhadkrishna@gmail.com

Citation:

Jha KK, Regmi D.
Prevalence of Anaemia
among Patients attending
Central Laboratory at a
Tertiary Care Centre in
Nepal. MedS. J. Med. Sci.
2021;1(1):8-10

ABSTARCT

INTRODUCTION Anaemia is a very common problem in developing country like Nepal among children's and young females. It is necessary to detect haemoglobin at early stage to know about anaemia. Anaemia in female causes dizziness and loss of concentration, which may lead to fall down and cause severe injury. In pregnant woman anaemia leads to developmental delay in children. In anaemic pregnant females, loss of blood during delivery can cause complications and even death of mother and foetus. In children iron deficiency anaemia may cause loss of concentration, developmental delay and delay in maturity of brain. **MATERIALS AND METHODS:** This prospective, cross-sectional study was carried out at Rapti Academy of Health Sciences from 1st March 2019 to 1st April 2019. A total of 1000 samples which came in central laboratory on regular basis were taken and Mindray 5 part hematology analyzer was used to evaluate the samples. In samples with low haemoglobin count, peripheral smear examination was done to determine the type of anaemia. **RESULTS:** Patient blood samples were taken irrespective of age and sex. Out of the total 1000 cases from various Outpatient departments of Rapti Academy of Health Sciences, 240 (24%) patients were anaemic. **CONCLUSIONS:** Anaemia is a major problem worldwide and the most common anaemia is microcytic hypochromic anaemia, especially iron deficiency anaemia followed by megaloblastic anaemia and hemolytic anaemia. Thus, it is necessary to do haemoglobin count and stool examination of woman in hilly regions on a regular basis, which will be helpful to avoid further anaemia related complications.

KEY WORDS: Anaemia, Iron deficiency, megaloblastic, haemolytic

INTRODUCTION

Anaemia is a very common problem in developing country like Nepal among children's and young females. In world anaemia affects 1.62 billion people, which is 24.8% of the total population. The highest incidence of anaemia is in preschool children (47.4%) and the lowest is in men (12.7%) [1,2]. WHO criteria for evaluating anaemia hemoglobin concentration is less than 11g/dl in children 6 month to 6 year, 12 g/dl in children 6 to 14 years, 13 g/dl in adult male, 12 g/dl in adult non pregnant females and 11 g/dl in adult pregnant females. The most common anaemia is iron deficiency anaemia followed by diamorphic anaemia which consist of microcytic hypochromic anaemia as well as megaloblastic anaemia followed by hemolytic anaemia. Iron

deficiency in females and children causes mental weakness and deficiency in immune system [3,4,5,6,7,8]. The clinical presentation of iron deficiency anaemia in children is pica.

The most common cause of megaloblastic anaemia is deficiency of vitamin B12, folic acid and consumption of alcohol. Dugs like anticonvulsants and oral contraceptive pills can also cause megaloblastic anaemia. During pregnancy, infancy, disseminated cancer and marked increase in hemoptysis, the peripheral smear findings of megaloblastic anaemia includes macro-ovalocytes and hypersegmented neutrophils. The bone marrow findings is markedly hypercellular, due to increased numbers of megaloblasts, erythroid hyperplasia,

giant metamyelocyte, large megakaryocyte with bizarre multilobed nuclei. This study was done to find out the prevalence of anaemia visiting the OPD of various departments of Rapti Academy of Health Science, Ghorahi, Dang.

MATERIALS AND METHODS

Study design and setting

This study was a prospective cross-sectional study done at central laboratory of Rapti Academy of Health Sciences, Ghorahi, Dang, Nepal from 1st March 2019 to 1st April 2019.

Participants and study procedures

A total of 1000 samples including males, females, children and elderly patients which came in central laboratory from various departments of Rapti Academy of Health Sciences on regular basis were taken and Mindray 5 part hematology analyzer was used to evaluate the samples. Only in those samples with low haemoglobin count, peripheral smear examination was done to determine the type of anaemia. All the patient's blood samples with laboratory features of anaemia were included. The Institutional Review Committee (IRC) of Rapti Academy of Health Sciences reviewed and approved this study.

Statistical consideration

The data was entered into MS excel and transferred to SPSS version 17.0 for analysis. Descriptive statistics were employed to summarize the data. $p < 0.05$ was considered statistically significant.

RESULTS

Sociodemographic characteristics

Out of 1000 patients, 240 (24%) patients were found to be anaemic (Figure 1). 83.33% (n=200) were females and 16.66% (n= 40) were males (Figure 2). Peripheral smear showed microcytic hypochromic anaemia in 50% (n= 120) of all anaemic cases. Dimorphic anaemia was found in 41.66% (n=100), haemolytic anaemia was found in 1.66% (n=4) and anaemia of chronic disease in 6.68% (16) of all the anaemic cases (Table 1).

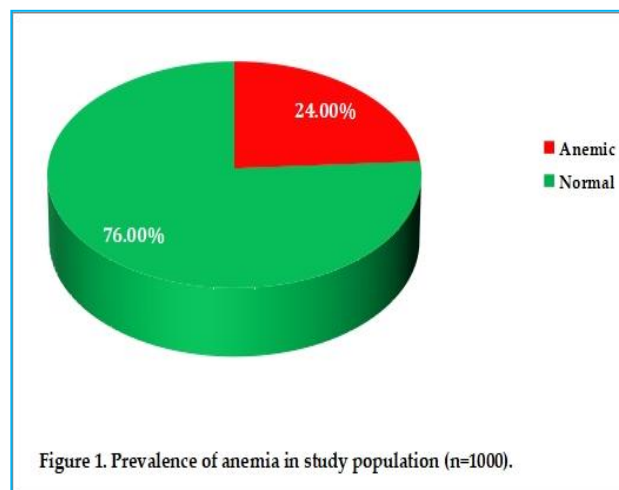


Figure 1. Prevalence of anemia in study population (n=1000).

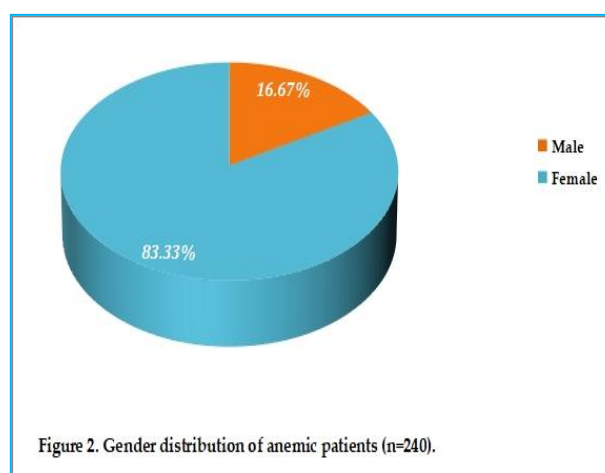


Figure 2. Gender distribution of anemic patients (n=240).

Table 1 Types of anaemia among anaemic cases by peripheral smear (n=240)

Types of anaemia	Number	Percentage (%)
Microcytic hypochromic	120 cases	50.00
Dimorphic anaemia	100 cases	41.66
hemolytic anaemia	4 cases	1.66
Anaemia of chronic disease	16 cases	6.68
Total	240 cases	100

DISCUSSION

The occurrence of iron deficiency anaemia worldwide is 30% and the most affected parts of world are developing countries [11]. The prevalence of anaemia in children's of age group 6 month to 6 years of Kathmandu valley was found to be 46% [12]. The prevalence of anaemia in this study in females was 83.33% which is slightly higher than the studies conducted earlier, where the prevalence of anaemia in women was between 60.5% to 78.3% [13,14]. Peripheral smear showed microcytic hypochromic anaemia in 50%, dimorphic anaemia in 41.66%, haemolytic anaemia in 1.66% and anaemia of chronic disease in 6.68% of all the anaemic cases. The most common cause of microcytic hypochromic anaemia was iron deficiency anaemia, which was primarily found during pregnancy and lactation.

At the beginning of sixth week of pregnancy, the plasma volume increases disproportionately compared to the red cell mass. Maternal plasma volume increases by 50% but the corresponding RBC mass increases by only 20-30%. Other causes of iron deficiency anaemia are dietary deficiency and scistosomiasis.

CONCLUSIONS

Anaemia is a major problem worldwide and the most common anaemia is microcytic hypochromic anaemia, especially iron deficiency anaemia followed by megaloblastic anaemia and hemolytic anaemia. Thus, it is necessary to do haemoglobin count and stool examination of woman in hilly regions on a regular basis, which will be helpful to avoid further anaemia related complications.

ADDITIONAL INFORMATION AND DECLARATIONS

Acknowledgements: I would like to thank all the departments like Medicine, Surgery, OBG, ENT of Rapti Academy of Health Sciences, Ghorahi, Dang for sending samples of anaemic patients.

Funding: Self

Competing Interests: The authors declare no competing interests.

Author Contributions: Concept and design: KKJ and DR; statistical analysis: KKJ; writing of the manuscript: KKJ and DR; revision and editing the manuscript: KKJ and DR. Both authors contributed and agree to be accountable for all aspects of the work.

Data Availability: Data will be available upon request to corresponding authors after valid reason.

REFERENCES

1. Benoist B, Mclean E, Egli I, Cogswell M. Worldwide prevalence of anaemia 1993-2005: WHO global database on anaemia. (Cited 17 June 2017).
2. Ministry of Health Nepal. Nepal micronutrient survey 1998, Kathmandu, Ministry of Health, 1999. (Cited 17 June 2017).
3. Tiwari K, Seshadri S. The prevalence of anaemia and morbidity profile among school going adolescent girls of urban Kathmandu, Nepal. *J Nep Med Assoc.* 2000;39:319-25.
4. Baral KP, Onta SR. Prevalence of anaemia amongst adolescents in Nepal: a community based study in rural and urban areas of Morang district. *Nepal Med Coll J.* 2009;11:179-82.
5. Kotecha PV. Nutritional Anaemia in Young Children with Focus on Asia and India. *Indian J Community Med.* 2011;36:8-16.
6. Sinha N, Deshmukh PR, Garg BS. Epidemiological correlates of nutritional anaemia among children (6-35 months) in rural Wardha, Central India. *Indian J Med Sci.* 2008;62:45-54.
7. Awasthi S, Das R, Verma T, Vir S. Anaemia and undernutrition among preschool children in Uttar Pradesh, India. *Indian Pediatr.* 2003;40:985-90.
8. Seshadri S, Gopaldas T. Impact of Iron supplementation on cognitive functions in preschool and school aged children: the Indian experience. *American journal of clinical nutrition.* 1989;50:675S-84.
9. Soemantri AG. Preliminary finding on iron supplementation and Learning achievements of rural Indonesians childrens. *American journal of clinical nutrition.* 1989;50:687S-96S.
10. Pollitt E et al. Iron deficiency and educational achievement in Thailand. *American journal of clinical nutrition.* 1989;50:687S-96S.
11. Bharati P, Shome S, Chakrabarty S, Bharati S, Pal M. Burden of anaemia and its socioeconomic determinants among adolescent girls in India. *Food Nutr Bull.* 2009;30:217-26.
12. Oliveira CS, Cardoso MA, Araújo TS, Muniz PT. Anaemia in children 6 to 59 months of age and associated factors in Jordão, Acre State, Brazil. *Cad Saude Publica.* 2011;27:1008-20.
13. Neuman NA, Tanaka OY, Szarfarc SC, Guimarães PR, Victora CG. Prevalence and risk factors for anaemia in Southern Brazil. *Rev Saude Publica.* 2000;34:56-63.
14. Baral KP, Onta SR. Prevalence of anaemia amongst adolescents in Nepal: a community based study in rural and urban areas of Morang district. *Nepal Med Coll J.* 2009;11:179-82.