



IRON DEFICIENCY ANEMIA PREVALENCE IN CHILDREN OF LAHORE

1. Assistant Prof.
Govt. College of Home Economics,
Gulberg, Lahore.
2. Research Coordinator,
Statistical Consultancy and Training
Center, Lahore.
3. FCPS, Pediatric Medicine,
Children Hospital Lahore
4. Assistant Prof. and HOD of
Biostatistics:
Gulab Devi Post Graduate Medical
Institute Lahore.
5. Principal
Govt. College of Home Economics,
Gulberg, Lahore.

Correspondence Address:
Dr. Farzana Kishwar
Assistant Prof.
Govt. College of Home Economics,
Gulberg, Lahore.
f_kishwar@yahoo.ca

Article received on:
27/06/2015
Accepted for publication:
18/08/2015
Received after proof reading:
09/09/2015

INTRODUCTION

The most common food deficiency is Iron deficiency in children as well as in adults. It has negative effects both on individual's health and his every day activities. Iron deficiency also affects motor skills and mental development of the affected person. It is harmful for infants, kids, and teenagers.¹ Annually more than two billion people are being affected globally.² Iron deficiency anemia is extremely common in under-developed countries. It is also a problem in developed countries where other forms of undernourishment have already been nearly eradicated. For anemia Iron deficiency is not the only culprit there are other medical reasons for this. ID (Iron deficiency) is usually the main cause for anemia.²

IDA (Iron deficiency anemia) is very dangerous & alarming in children because its affects are long term. In Many studies the relationship between IDA

Dr. Farzana Kishwar¹, Tahira Ashraf², Dr. Islam Hanif³, Asif Hanif⁴, Dr. Samia Kalsoom⁵

ABSTRACT... Objective: The objective of this study was to determine prevalence of iron deficiency anemia in children of Lahore. **Study Design:** Cross sectional survey. **Setting:** Hospitals in different areas of Lahore. **Period:** 3 months. **Methodology:** A total sample of three hundred and sixty children was taken from different areas of Lahore. Simple random sampling technique was used. Data collection was done by using a cross sectional survey. An informed consent was taken from the parents of children selected for including in the study and using their data for research purpose. The complete demographic information like name, age, sex, address was obtained. Venous blood samples were obtained for analysis of their hemoglobin (Hb) level. All the data collected was entered and analyzed by using SPSS version 20. **Results:** A total of 360 children were selected for the study. The mean age of respondents was 9.87 ± 2.67 . Among all subjects there were 158(43.89%) male and 202 (56.1%) were female patients. The mean Hb in all subjects was 9.82 ± 3.46 . The overall prevalence of iron deficiency anemia was 224(62.2%). Among anemic patients there 101 (45%) male and 123 (55%) female patients in this study, we found no significant association between anemia and gender, p-value >0.05. **Conclusion:** Prevalence of iron deficiency anemia is considerably higher in children of Lahore under study. We should take some defensive measure to cope with it as mathematical deficiency affect children's health, mental and physical activities.

Key words: Prevalence, Nutrition, Hemoglobin Iron Deficiency, Children

Article Citation: Kishwar F, Ashraf T, Hanif I, Hanif A, Kalsoom S. Iron deficiency anemia; Prevalence in children of Lahore. Professional Med J 2015;22(9):1122-1125.
DOI: 10.17957/TPMJ/15.2999

and poor cognitive and motor growth along with behavioral problems have been proven.³

It is estimated that Anemia is affecting one-half of the school-age kids in developing countries. There was a study on large scale in which there were 3595 respondents (school kids) from Pemba Island, Zanzibar, 62.3% of respondents were anemic (hemoglobin < 110 g/L), and 82.7% of anemia was because of iron deficiency (majorly due to malnutrition).⁴ In another study approximately 700,000 young children and 7.8 million young women were reported with iron deficiency; of these, approximately 240,000 young children and 3.3 million young women have iron deficiency anemia. Iron deficiency was also reported in no more than 7% of grown-up children and 1% of young boys.⁵

There might be several causes of anemia in

children. Mental diseases and genetic deformity is one cause or it can be under nutrition due to any constant disease. Nutrient deficiency appears to be the cause of one third anemic patients, with around 50% being deficient in iron, either alone or in combination with foliate or B12 deficiency. Thus discovering the cause of the food deficiency may lead to important opportunity beyond correction of the anemia. Researcher therefore aimed to study the occurrence of nutritional deficiency anemia in Pakistani settings to emphasize the impact of malnutrition on the growth of young children.

MATERIAL AND METHODS

Study Design

The study design is Cross sectional survey.

Sampling Technique

Simple Random Sampling

Duration of Study

This study was completed in 3 months

Setting

The study was conducted by taking data from hospitals in different areas of Lahore.

SAMPLE SIZE

A total of 360 children were taken in this study using percentage of Anemia in children 62.3%⁴ at 5% type-1 error and 95% confidence level.

SAMPLE SELECTION

Inclusion criteria

All children of either gender aged < 15 years

Exclusion criteria (for cases and controls)

- Presence of any chronic systemic diseases (cardiac, renal, metabolic, malignancy, rheumatologic, etc) [was assessed on available medical record]
- Patients receiving an iron supplements within the past one month (was assessed on their medical record)
- Patients having neuro developmental delay,

previous afebrile seizure or acute central nervous system infection (meningitis , encephalitis) [was assessed on their medical record]

DATA COLLECTION PROCEDURE

A total of 360 children fulfilling inclusion criteria were taken from different areas of Lahore. An informed consent was taken from their parents for including in the study and using their data for research purpose. The demographic information like name, age, sex, address was obtained. Venous blood sample was obtained for analysis of their hemoglobin (Hb) level. All the data collected was entered and analyzed using SPSS version 20. For quantitative variables like age and hemoglobin (Hb) level mean \pm S.D was calculated. For qualitative variables like gender of patients and frequency of iron deficiency anemia was presented in form of frequency (%). Chi-square test was applied to see association of IDA in relation to gender. $P \leq 0.05$ was considered as significant.

RESULTS

A total of 360 children were enrolled for the study. The mean age of subjects was 9.87 ± 2.67 . Among all subjects there were 158(43.89%) male and 202 (56.1%) were female patients. The mean Hb in all subjects was 9.82 ± 3.46 . The overall prevalence of iron deficiency anemia was 224(62.2%). Among anemic patients there 101 (45%) male and 123 (55%) female patients in this study, we found no significant association between anemia and gender, p-value >0.05.

		Anemia		Total
		Yes	No	
Gender	Male	101	57	158
	Female	123	79	202
Total		224	136	360
p-value		0.55 [not significant]		
Odds ratio		1.13 (0.740 – 1.75)		

Table-I. Comparison of Anemia in male and females

DISCUSSION

Iron deficiency is reported to be one of the

most prevalent nutritional problems in the world today, especially in developing countries, with an estimated 5 billion people so afflicted and iron deficiency anemia is a very common nutritional insult among human infants, especially between 6 and 24 months.^{7,8} Iron deficiency anemia is a leading cause of infant morbidity and mortality worldwide. Numerous studies have demonstrated that even moderate anemia (hemoglobin <100 g/L) is associated with depressed mental and motor development in children that may not be reversible.^{3,9}

In developing countries 46-66% of children less than 4 years of age are anemic and 50% of them have iron deficiency anemia. Its prevalence among the Pakistani children is nearly 65%.^{7,10} In Pakistan prevalence of Anemia in children is reported from 33%¹¹ - 73.5%¹². In present study the mean Hb in all subjects was 9.82 ± 3.46 . The overall prevalence of iron deficiency anemia was 224(62.2%). The prevalence of anemia in current study is in agreement to the above cited literature. Among anemic patients there 101 (45%) male and 123 (55%) female patients in this study, we found no significant association between anemia and gender, p-value >0.05.

It is already well-known that iron is a key player in various metabolic transactions, therefore, must be provided at sufficient levels to sustain the normal functioning of the body. Iron is also essential for enzymes involved in neurochemical reactions.¹³ It is interesting to note that reduction in the levels of several neurotransmitters, monoamines and aldehyde oxidase is also critically associated with iron deficiency which proved to influence normal behavioral and developmental processes. Iron deficient infants showed to have less confidence and other social discrepancies when compared with normal children.^{14,15} Moreover, the long-term developmental outcome of infants with iron deficiency also remains poor. One study showed that children who had moderately severe iron-deficiency anemia as infants, with hemoglobin levels ≤ 100 g per liter, had lower scores on tests of mental and motor functioning at school entry than the rest of the children.¹⁶

CONCLUSION

Prevalence of iron deficiency anemia is considerably higher in our children. We should take some preventive strategies to cope with it as numerical deficiency can affect children's health, mental and physical activities.

Copyright© 18 Aug, 2015.

REFERENCES

1. Control CfD, Prevention. **Iron deficiency--United States, 1999-2000.** MMWR Morbidity and mortality weekly report. 2002;51(40):897.
2. Stoltzfus RJ, Dreyfuss ML, Organization WH. **Guidelines for the use of iron supplements to prevent and treat iron deficiency anemia:** Ilsi Press Washington ^ eDC DC; 1998.
3. Grantham-McGregor S, Ani C. **A review of studies on the effect of iron deficiency on cognitive development in children.** The Journal of nutrition. 2001;131(2):649S-68S.
4. Stoltzfus RJ, Chwaya HM, Tielsch JM, Schulze KJ, Albonico M, Savioli L. **Epidemiology of iron deficiency anemia in Zanzibari schoolchildren: the importance of hookworms.** The American journal of clinical nutrition. 1997;65(1):153-9.
5. Looker AC, Dallman PR, Carroll MD, Gunter EW, Johnson CL. **Prevalence of iron deficiency in the United States.** Jama. 1997;277(12):973-6.
6. Guralnik JM, Eisenstaedt RS, Ferrucci L, Klein HG, Woodman RC. **Prevalence of anemia in persons 65 years and older in the United States: evidence for a high rate of unexplained anemia.** Blood. 2004;104(8):2263-8.
7. Bidabadi E, Mashouf M. **Association between iron deficiency anemia and first febrile convulsion: A case-control study.** Seizure. 2009;18(5):347-51.
8. Kumari PL, Nair M, Nair S, Kailas L, Geetha S. **Iron deficiency as a risk factor for simple febrile seizures-a case control study.** Ind pediatric. 2012;49(1):17-9.
9. Organization WH. **Malnutrition: the global picture.** Geneva: World Health Organization. 2000.
10. Stoltzfus RJ. **Defining iron-deficiency anemia in public health terms: a time for reflection.** The Journal of nutrition. 2001;131(2):565S-7S.
11. Siddiqui MS, Siddiqui MK. **Public health significance of iron deficiency anaemia.** Pak Armed Forces Med J. 2008;58(3):315-27.

12. Akhtar S, Ghaffar F. **Prevalence of Anemia in under five-year-old Children in the Kuwait Teaching Hospital Peshawar, Khyber Pakhtunkhwa.** PUTAJ Humanities and Social Sciences. 2014;21(2):165-71.
13. Ambruso DR HT, Goldenberg NA. **Iron deficiency anemia.** Current diagnosis and treatment –Pediatrics Denver USA: Mc Graw Hill; 2009. 810-11 p.
14. Abbaskhanian A, VAHIDSHAHI K, PARVINNEZHAD N. **The association between iron deficiency and the first episode of febrile seizure.** JOURNAL OF BABOL UNIVERSITY OF MEDICAL SCIENCES (JBUMS). 2009.
15. Felt BT, Beard JL, Schallert T, Shao J, Aldridge JW, Connor JR, et al. **Persistent neurochemical and behavioral abnormalities in adulthood despite early iron supplementation for perinatal iron deficiency anemia in rats.** Behavioural brain research. 2006;171(2):261-70.
16. Lozoff B, Jimenez E, Wolf AW. **Long-term developmental outcome of infants with iron deficiency.** New England journal of medicine. 1991;325(10):687-94.

PREVIOUS RELATED STUDY

Ghazala Irshad, Saghir Ahmad Jafri, Samina Kousar, Irshad Ali. IRON DEFICIENCY ANEMIA; SIGNIFICANCE OF SERUM FERRITIN IN DIAGNOSIS IN PREGNANT FEMALES OF PAKISTAN (Original) Prof Med Jour 18(3) 470-474 Jul, Aug, Sep 2011.

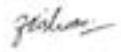
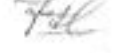
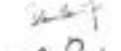
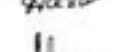
Raheela Farhat, Mahnaaz Roohi. IRON DEFICIENCY ANEMIA; SAFETY AND EFFICACY ON INTRA VENOUS IRON SU-CROSE VERSUS ORAL FERROUS SULPHATE (Original) Prof Med Jour 14(2) 263-265 Apr, May, Jun, 2007.

Shaheen Ahmed, Naeem Fareed, Nadeem Sadiq, Salman Ali, Mehboob Sultan, Umar Khurshid. IRON DEFICIENCY ANEMIA; SINGLE VERSES THREE TIMES DAILY DOSES OF FERROUS SULPHATE (Original) Prof Med Jour 16(2) 209-215 Apr, May, Jun, 2009.

Shezadi Sabah, Musarat Ramzan , Irum Fatima. IRON DEFICIENCY ANEMIA; ROLE OF NUTRITIONAL DEPRIVATION AMONG FEMALE PATIENTS OF REPRODUCTIVE AGE GROUP (Original) Prof Med Jour 17(4) 686-690 Oct, Nov, Dec 2010.

M. Saeed Siddiqui, Atif Sitwat Hayat, M. Khalid Siddiqui, Naila Atif, Hamayun Shah . Iron deficiency anemia; scenario of pregnant women living at an altitude of > 5000 feet in District Abbottabad (Original) Professional Med J Mar-Apr 2012;19(2): 155-158.

AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author-s Full Name	Contribution to the paper	Author=s Signature
1	Dr. Farzana Kishwar	Planning, Designing and write up	
2	Tahira Ashraf	Designing and write up	
3	Dr. Islam Hanif	Write up and data process	
4	Asif Hanif	Planning and Data analysis	
5	Dr. Saima Kalsoom	Planning and Data analysis	