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PREVALENCE OF ANAEMIA AMONG SCHOOLCHILDREN IN EASTERN SUDAN

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ABSTRACT

Background: Anaemia in children is a health problem particularly in developing countries, such as Kassala area, eastern Sudan.

Methods: A total of 401 children from four primary schools in kassala were random simple stratified selected during a period of two months and prevalence of anaemia was estimated, clinically and by measuring haemoglobin concentration.

Results: Clinical examination revealed anaemia in 373 of the students and haemoglobin estimations proved anaemia in 93% of the students enrolled in the study (Hb. less than 13.5 g/dl).

Conclusion: The study showed high prevalence of anaemia among schoolchildren in the study area, so we recommend that more studies must be done in this area and the heath authorities may interfere by heath education and other interventional methods (e.g. provision of iron and folate).

BACKGROUND

Anemia refers to a state in which the level of haemoglobin in the blood is below the normal range appropriate for age. (1) Anemia is a serious public health problem in low and middle-income countries, especially among women of child bearing age (15–49 years old) and their children. (2) It has negative effects on working capacity, intellectual performance and pregnancy. (3) Anaemia in childhood is

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defined as a haemoglobin concentration below established cut off levels. [4] The World Health Organization (WHO) has suggested levels of haemoglobin below which anaemia is said to be present. These levels are < 11g/dL (110 g/L) in children aged 1-2 years and < 11.2g/dL (112 g/L) in children aged 3-5 years.[5] And less than13.5g/dl in children aged 6-12 years. [6] In a study composed of 1531 students between 6 and 16 years old from 14 primary schools located in seven different regions of Istanbul, the overall prevalence of anaemia was found to be 27.6 per cent. [7] According to the United Nations Childrens'Fund (UNICEF), 90% of all types of anemia in the world are due to iron deficiency. [8] In South and Central America, iron deficiency anemia has been a severe public health problem, affecting as many as 50% of pregnant women and children. [9] Tribal schools children aged 6-12 years from government schools of villages covered by *Kun* Primary Health Centre (PHC), Dhariyawad block of Udaipur region, Rajasthan were studied to assess the prevalence of anaemia. Clinical examination showed that 95.1 % children were clinically anaemic. Clinical signs such as pale conjunctiva (77.6 %), and koilonychias. (44.3 %) were observed among the school children. Blood haemoglobin revealed that 93.7 per cent children were suffering from different forms of anaemia. [10]

The aim of our study is to detect the prevalence of anaemia among schoolchildren in Kassala, eastern Sudan.

MATERIALS & METHODS

A cross sectional, randomized, study was conducted in Alswagi ALganobia and Mukram elementary schools (for boys and girls) in Kassala, eastern Sudan, during the period January - February 2009. The study group included 401 students (186 males (46.4%) and 215 females53.6%) between 7 and 15 years old from these primary schools. The permission of the Education Director, in the area was obtained. Then the school authorities and

Parents/guardians of children were approached for participation in the study. The headmasters then told their students and pupils, who thereafter obtained the consent of their parents to be part of the study. Data were collected using pre-tested questionnaires. Clinical examinations were done concentrating on: pallor, jaundice, splenomegally and hepatomegaly. Haemoglobin (Hb) level was measured using Cyanmethaemoglobin method. This was done by adding 0.02 ml of blood sample collected to 4 ml of Drabkin solution, then read in colorimeter (after 5 minutes of incubation period).[11]

RESULTS

During the period of study four hundred and one students and pupils were examined clinically. Most mother of students (301) (74.2%), either were not educated or they had primarily educated. [373 (93%) of students were anaemic (haemoglobin less than 13.5 g/dl)]. Clinically 261 (65%) had pale conjunctiva, koilonychias found in 21(5.2%) and jaundice in 16(4%). Thirty nine (9.7%) had a history of PICA. There was no haepatomegally or splenomegally observed.

Table1. Mean value and (SD) for *all students and pupils:*

Age(years)	10.9(2.2)
Weight(kg)	29.9(10.2)
Height(cm)	140.9(13.2)

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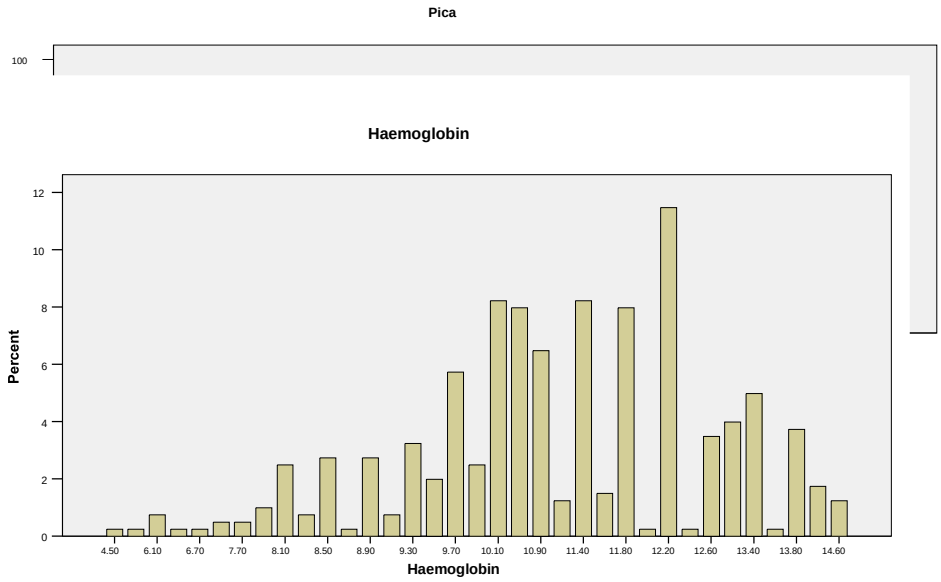
Hb.(gm/dl)	11.0(1.8)



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DISCUSSION

This is probably the first study in this area, so it showed that anaemia should be considered as a major health problem in children in eastern Sudan. In total, 93 % of 7-15 years old children suffered from anaemia (Hb. less than13.5 gm/dl). [6] This may be due to mother education: 305(76%) of mothers are not educated, Khalwas or primary schools level. It differed from study done in Urban Delhi in four primary schools, the prevalence of anaemia was 41.8 % [12] and this might be due to differences in two study areas and similar to the study conducted in Rajastan (the prevalence of anaemia among children was 95.1%) [10], this may be due to similarity of the environments of the two study areas.

The present study also is deferent from a study carried out in Siauliai, Lithuania; the prevalence of anemia was 52.2 %[13]. This study is almost similar to the study conducted among girls of schools going age 6-18 years, from the Slums of AhmedAbad city, India, the prevalence of anaemia was 81.8%. This might be due to the similarity of two study areas, and also some habits relating to those girls just like habit of taking tea/coffee after meals and anaemia is due to the interference of the dietary bioavailability of iron by the tannin contents of tea/coffee[14].

CONCLUSION

We think that the prevalence of anaemia is high in the study area, so more studies need to be done in this area. This high prevalence of anaemia among schoolchildren in Kassala, eastern Sudan highlights the need to develop pragmatic intervention programmes incorporating various strategies to improve dietary intake and bioavailability of iron; nutritional supplementation of iron and folic acid tablets and fortification of edible dietary items with iron. Also Health education and some interventional measures should be undertaken.

Ethics: The study received ethical clearance from the ethical clearance committee, ministry of health, Kassala state.

Statistics: Data were entered in computer using SPSS *version 14* for windows for analysis. The means (age, weight, height and haemoglobin) were calculated for all the patients.

Authors' contributions: SFM, OAOS and MM designed the study; SFM & OAOS carried out the clinical work. MM and MA carried out the analysis of the data. MM carried out the lab work. SFM and MM are guarantors of the paper. All the authors read and approved the final version.

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REFERENCES

1. Christopher Haslett, *et al*. Davidson's Principle and Practice of Medicine. Nineteenth edition, Churchill Livingstone, India, 2004.pp.902.
2. Meeting between the World Health Organization and the Partnership for Child Development (Geneva, 7–8 December 1993). Geneva, World Health Organization, 1993 (WHO/CDS/IPI/94.1).
3. DeMaeyer EM et al. Preventing and controlling iron deficiency anaemia through primary health care. Geneva, World Health Organization, 1989.
4. World Health Organization: Iron Deficiency Anaemia. Assessment, Prevention and Control; *WHO* 2001
5. Harris RJ; Nutrition in the 21st century: what is going wrong. *Arch Dis Child*. 2004; 89: 154-8.
6. Joseph J. Irwin and Jeffrey T. Kichner. Anemia in children. American Family Physician.Oct.2001
7. Emel Gür, Inci Yildiz, Tiraje Celkan, Günay Can, Semra Akku, Ahmet Arvas, Sima Güzelöz[c] and Serdar Cifcili. Prevalence of Anemia and the Risk Factors among Schoolchildren in Istanbul. *Journal of Tropical Pediatrics* 2005; 5: 346-350.
8. Aijaz Ahmad Lone, Shakir Ahmad Wani, Zubair Ashai, Fazal Q. Parray. Anaemia in Children - A Challenge. *JK- Practitioner*; 2006; 4: 229
9. Freire WB. Strategies of the Pan American Health Organization /World Health Organization for the control of iron deficiency in Latin America. Nutr Rev.1997; 55: 183-8.
10. Sweta Vyas and Maya Choudhry. Prevalence of Anaemia in Tribal School Children. *J. Hum. Ecol*. 2005; 17: 289-291
11. Monica Cheesbrough. District Laboratory Practice in Tropical Countries Part Two. 2nd ed. Cambridge, 2006. pp 301.
12. Gomber S, Bhawna, Madan N, Lal A, Kela A. The Indian Journal of Medical Resaerch. 2003; 118: 167-71
13. Izolda Krivienė, Lina Rageliene. The prevalence of anemia among schoolchildren in Šiauliai region of Lithuania. Acta Medica Lituanica. 2006; 13: 56–59.
14. A Verma, VS Rawal, G Kedia, D Kumar, J Chauhan. FACTORS INFLUENCING ANAEMIA AMONG GIRLS OF SCHOOL GOING AGE (6-18 YEARS) FROM
15. THE SLUMS OF AHMEDABAD CITY. Indian Journal of Community Medicine2004; 24: 25-6