

# Dedication

To my dear parents,

To my sisters and my brother,

To the staff of Sudan university of  
science and technology collage of  
medical laboratory,

To my colleagues,

To the staff of Gaafer Ibn Auf hospital,

This research without your dedication,  
Assistance and encouragement would  
not have come into existence

# Acknowledgements

Praise is to God first for enabling me to achieve this research. I'm very grateful to my supervisor Dr. Malik Hassan Ibrahim Alfadni, for being very keen to make us highly oriented in the field of hematology.

I'm very grateful to other members in the medical field who help me a lot and paved the way for me to progress.

## **Abstract**

This study was descriptive hospital based study, conducted in Gaafer Ibn Auf pediatric hospital, during the period from November 2008 to April 2009. The aim of this study is to determine the frequency of iron deficiency anemia among microcytic hypochromic anemia, in children that referring to Gaafer Ibn Auf pediatric hospital.

100 patients (52 males and 48 females) were informed about the study and agreement for participation was obtained. Venous blood of 5ml was bled, 2.5ml in EDTA containers for complete blood count and 2.5ml in plain containers for serum iron and serum ferritin .

Fully automated hematology analyzer (mythic 18), and fully automated Biosystem A25 were used for the analysis. The results found that the frequency of iron deficiency anemia was 13% while 87% represent other typed of microcytic hypochromic anemia. The age from 18-24 months represent high percentage (23%). The mean of Hb concentration, PCV, MCV, MCH, MCHC, serum iron and serum ferritin concentrations, when compare with standard reference values, there were significant differences (P value <0.05).

In conclusion iron deficiency anemia did not highly frequent among the study population.

هذه دراسة وصفية تحليلية تم إجراؤها لتحديد نسبة مرض فقر الدم الناتج عن نقص الحديد وسط فقر الدم الناتج عن (microcytic hypochromic anemia's)، في الأطفال المرضى الذين يترددون لمستشفى جعفر بن عوف في الفترة من نوفمبر 2008م حتى أبريل 2008م.

تم إعلام مائة مريض بأهداف البحث وأخذت موافقتهم، ثم أخذت عينة دم 5ml من كل مريض (2.5ml في حويات تحتوي على مانع التجلط لاختبارات إعداد الدم الكامل، و 2.5ml في حويات خالية من مانع التجلط لاختبار نسبة كل من (iron and ferritin) في الدم.

تم استخدام جهاز (mythic 18) و(A25) اللذان يعملان اتوماتيكياً للتحليل الكامل للدم وتحديد نسبة (iron and ferritin) على التوالي.

قد أظهرت النتائج الاحصائية ان نسبة انتشار فقر الدم الناتج عن نقص الحديد هي 13%، بينما أظهرت ان نسبة الانواع الاخرى 87% من (microcytic hypochromic anemias).

مجموعة الاعمار 18-24 شهر تمثل اعلى النسب 23%. ومتوسطات كل من نسبة خضاب الدم PCV, MCV, MCH, MCHC ونسبة كل من (iron and ferritin) عندما قورنت ب قيم المعايير القياسية وجد ان هناك فروقات ذات دلالة إحصائية ( $P \text{ value} < 0.05$ ).

ختاماً فقر الدم عن نقص الحديد ليس كثير التردد في وسط مرضي الدراسة.

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## **Lists of Abbreviations**

|       |                                    |
|-------|------------------------------------|
| HB    | Hemoglobin                         |
| G6PD  | Glucose 6 Phosphate Deficiency     |
| RBCs  | Red blood Cells                    |
| RPI   | Reticulocyte production index      |
| TWBCs | Total white blood Cells            |
| TIBC  | Total iron binding capacity        |
| sTfR  | Serum transferrin capacity         |
| PCV   | Packed cell volume                 |
| MCV   | Mean cell volume                   |
| MCH   | Mean cell hemoglobin               |
| MCHC  | Mean cell hemoglobin concentration |
| IDA   | Iron deficiency anemia             |