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# Assessment of Functional Iron Status in Patients with Chronic Kidney Disease Attending University of Ilorin Teaching Hospital, Ilorin

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## INTRODUCTION

- Functional Iron deficiency has been found to be a common cause of poor response to erythropoietin stimulating agents in anaemic patients with chronic kidney disease (CKD) [1,2].
- However, little is known about the functional iron status of patients with CKD in our environment.
- This study evaluates the functional iron status in patients with CKD.

## AIM

- The aim of this study is to evaluate the functional iron status in patients with chronic kidney disease (CKD).

## METHOD

- This was a hospital-based cross-sectional study of 113 patients with CKD who attended Nephrology Clinic at the University of Ilorin Teaching Hospital (UITH) and 113 age- and sex- matched control.
- Informed consent and relevant information were obtained using a study proforma.
- Full blood count, reticulocyte count, serum ferritin, soluble transferrin receptor (sTfR), total iron binding capacity (TIBC), percentage transferrin saturation (TSAT), c-reactive protein (CRP) levels of both patients and controls were carried out.
- Full blood count (FBC) was measured using automated haematology analyser, Sysmex Kx21, Serum Ferritin, TIBC and CRP were assessed using ELISA method while, serum iron and TIBC were assessed using the colourimetric method with POINTE SCIENTFIC, INC iron/TIBC test kit.
- Data was analysed using descriptive and inferential statistics on an SPSS software version 22.0. The level of statistical significance was set at p-value ≤ 0.05.

## RESULTS

- The mean values of serum ferritin, serum iron, TIBC and CRP was significantly higher in patients compared with control participants (P<0.001, 0.023, <0.001 and 0.001) respectively, although there was no significant difference in the mean TSAT and sTfR between patient and the control participants.
- Normal iron status was seen in 60.2% of the patients, functional iron deficiency in 19.5%, and absolute iron deficiency in 15.0%. There was no statistically significant relationship between CRP and FID.

**Table 1: Serum ferritin, serum iron, TIBC, TSAT, sTfR and CRP levels in patients with CKD and controls**

| | Patients | Control Participants | | |
|---|---|---|---|---|
| **Variables** | Mean ± Sd | Mean ± Sd | t | p value |
| **Ferritin (ng/ml)** | 290.12 ± 161.52 | 99.46 ± 53.05 | 11.922 | <0.001* |
| **Serum iron (µg/ml)** | 122.99 ± 77.29 | 104.72 ± 34.62 | 2.294 | 0.023* |
| **sTfR (nmol/ml)** | 18.27 ± 11.38 | 17.61 ± 6.14 | 0.544 | 0.587 |
| **TIBC (µg/ml)** | 405.56 ± 147.34 | 316.75 ± 72.71 | 5.745 | <0.001* |
| **TSAT (%)** | 30.72 ± 14.36 | 32.74 ±6.83 | -1.354 | 0.177 |
| **CRP (µg/ml)** | 3.02 ±1.45 | 1.51 ± 0.95 | 9.316 | <0.001* |
| **Creatinine (µmol/l)** | 434.92 ± 368.34 | 68.73 ± 10.01 | 10.564 | <0.001* |

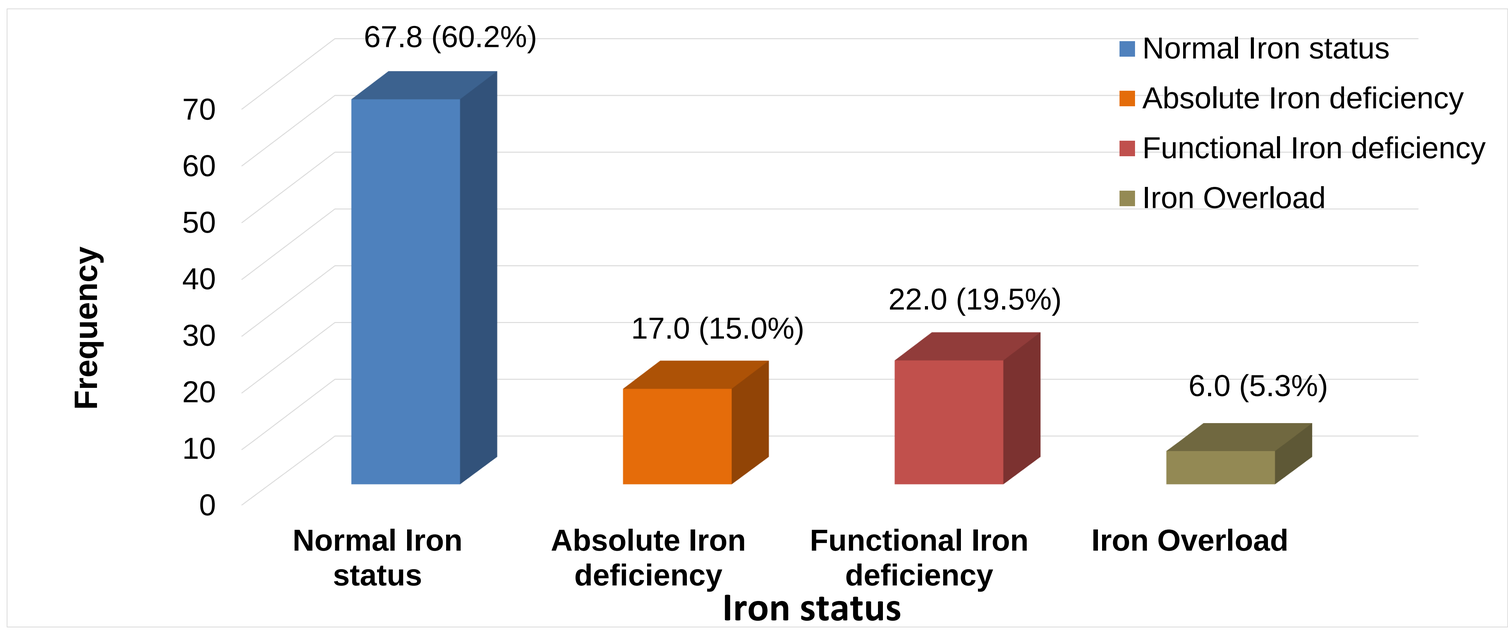


**Figure 1: Iron status among patients with CKD**

## CONCLUSIONS

- Functional Iron Deficiency is the most predominant form of iron deficiency seen in these patients .
- Iron studies and CRP should be incorporated into routine investigations of patient with CKD and anaemia.

## ACKNOWLEDGEMENT

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