Clin Exp Nephrol

. 2023 Jan;27(1):66-71.

 doi: 10.1007/s10157-022-02281-2. Epub 2022 Oct 3.

**Prevalence and risk factors for functional iron deficiency in children with chronic kidney disease**

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* PMID: 36192566

* DOI: [10.1007/s10157-022-02281-2](https://doi.org/10.1007/s10157-022-02281-2)

**Abstract**

**Introduction:**Anemia in chronic kidney disease (CKD) is multifactorial. The presence of functional iron deficiency (FID), whereby, there is a block in the transport of iron from macrophage to erythroid marrow is one possible etiology. In this study, we aim to assess the prevalence and risk factors of FID in pediatric CKD.

**Methods:**A cross-sectional study was performed from March to December 2018, after obtaining Institute Ethical Clearance. Children aged ≤ 12 years with CKD, with or without iron supplementation who consented were enrolled. Patients on erythropoietin or on maintenance dialysis were excluded. Details of patients and diseases characteristics were recorded. Various laboratory parameters including complete blood count, red blood cell indices, hypochromic RBC, reticulocyte hemoglobin content, and serum ferritin were measured. Appropriate statistical tests were applied.

**Results:**Out of 174 children, 127 (73%) had structural kidney disease as an etiology of CKD, and 110 (63%) had anemia. Prevalence of anemia was 44%, 43%, 74%, 64% and 92% in CKD stage 1, 2, 3, 4 and 5, respectively. Absolute iron deficiency was found in 66 (38%) even when some children were already on iron supplementation. FID was seen in 44 (25%) and on multivariate analysis, lower estimated glomerular filtration rate and mineral bone disease are associated risk factors.

**Conclusion:**FID is present in one-fourth of our CKD cohort. It should be considered when the response to adequate measures of improving hemoglobin level fails. More studies are required to know its impact on short-term and long-term patient-related outcomes such as quality of life and mortality.

**Keywords:**Anemia; Children; Chronic Kidney Disease (CKD); Functional Iron Deficiency (FID); Iron deficiency.

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