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Comparison of absolute and functional Iron deficiency anaemia in terminal Chronic Kidney Disease (CKD)

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Objectives: Absolute Iron Deficiency Anaemia (AIDA) occurs in absent or reduced iron stores in the body for erythropoiesis. In Functional Iron Deficiency Anaemia (FIDA), conventional biomarkers indicate adequate iron stores despite the low iron availability for erythropoiesis. Both types of iron deficiency anaemia (IDA) are common in hemodialysis (HD) patients at end-stage CKD due to multiple causes including malnutrition, chronic blood loss, and chronic inflammation leading to poor quality of life among them. The objective of this study was to compare the prevalence and associated factors of AID and FID among CKD patients undergoing HD therapy.

Methods: A descriptive cross-sectional study was conducted enrolling 300 randomly selected HD patients at the Nephrology Unit, National hospital, Kandy. An interviewer-administered questionnaire and patient's laboratory health reports were used to collect data. Anaemia (Haemoglobin<10.5g/dl), AID (ferritin<200ng/ml, transferrin saturation ratio (TSAT)<20) and FID (ferritin>200ng/ml, TSAT<20) were defined according to the Kidney Disease Outcome Quality Initiative (KDOQI) guidelines.

Results: Out of 300 participants, 68.9% were male and the median age was 51.71(39- 64) years. More than half of the patients were anaemic (n= 198, 66 %), and 104 (34.7%) were classified as iron deficiency anaemia. Total prevalence of FIDA was 30.1% (n=91) while 4.3% (n=13) had AIDA. Mean serum ferritin levels were shown to be significantly different between absolute and functional IDA, reported as 157.54 ng/dl and 943.66 ng/dl accordingly (p = <0.001). None of the socio-demographic factors was associated with either type of IDA, but the mean serum C Reactive Protein (CRP) level was significantly higher in the FIDA group than in the AIDA group (p=0.004).

Conclusions: FIDA was more prevalent compared to AIDA in HD patients. FIDA was significantly associated with high CRP levels. Therefore, further research should be done to assess the accuracy of conventional biomarkers during the body's inflammatory status.