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Title: IRON DEFICIENCY IN CHRONIC HEART FAILURE PATIENTS AT THE UNIVERSITY TEACHING HOSPITAL IN LUSAKA, ZAMBIA.

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Background & Aims: Iron is essential in the formation of hemoglobin and myoglobin and in oxidative metabolism. Iron deficiency (ID) in heart failure (HF) patients has been reported around the globe and mortality from chronic heart failure (CHF) of 35% is reported at the university teaching hospital (UTH). Information on ID in CHF patients at UTH is scarce. Reduced work efficacy and quality of life as a result of ID have been reported in HF patients. The aim of this study was to determine the iron status in CHF patients at UTH, Lusaka, Zambia

Methods: CHF patients of New York Heart Association (NYHA) functional class II to IV participated in this cross-sectional study. The study was explained to patients and those who agreed to be part of the study were recruited into the study. Interviews and file reviews were used to collect demographic data. Venous blood was collected from the recruited patients and then transferrin levels and ferritin concentration were determined by Lancet laboratories. In this study, ID was defined as transferrin saturation of less than 20% and ferritin concentration of less than 100µg/L. A statistical significance of $P < 0.05$ was used at a 95% confidence interval. The data obtained were analyzed using STATA version thirteen and the chi-square test / Fisher's exact test and multivariate binary logistic regression were used to analyze the results.

Results: A total of 40 patients were enrolled in the study, comprising 18 males and 22 females. The median age was 48 (19 to 60) years. The prevalence of ID was 55%. Out of 40 patients, 55% had relative iron deficiency while 20% had absolute iron deficiency. Of the iron deficient patients, 45.5% were heart failure with reduced ejection fraction (HFrEF) while 54.5% were heart failure with preserved ejection fraction (HFpEF) patients. According to this study, both HFrEF and HFpEF patients were ID, but the ID was more common among patients with HFpEF.

Conclusions: ID was present in a significant proportion of adult patients with CHF at UTH, reflecting the increased morbidity encountered by this population. It is certainly plausible that ID may play a role in the pathogenesis and prognosis of HFpEF just like in HFrEF hence screening for ID in CHF patients should be done in order to improve patient quality of life.