

Are We Following AHA/ACC Guidelines for Screening and Managing Iron Deficiency in Heart Failure Patients? A Quality Assessment Project



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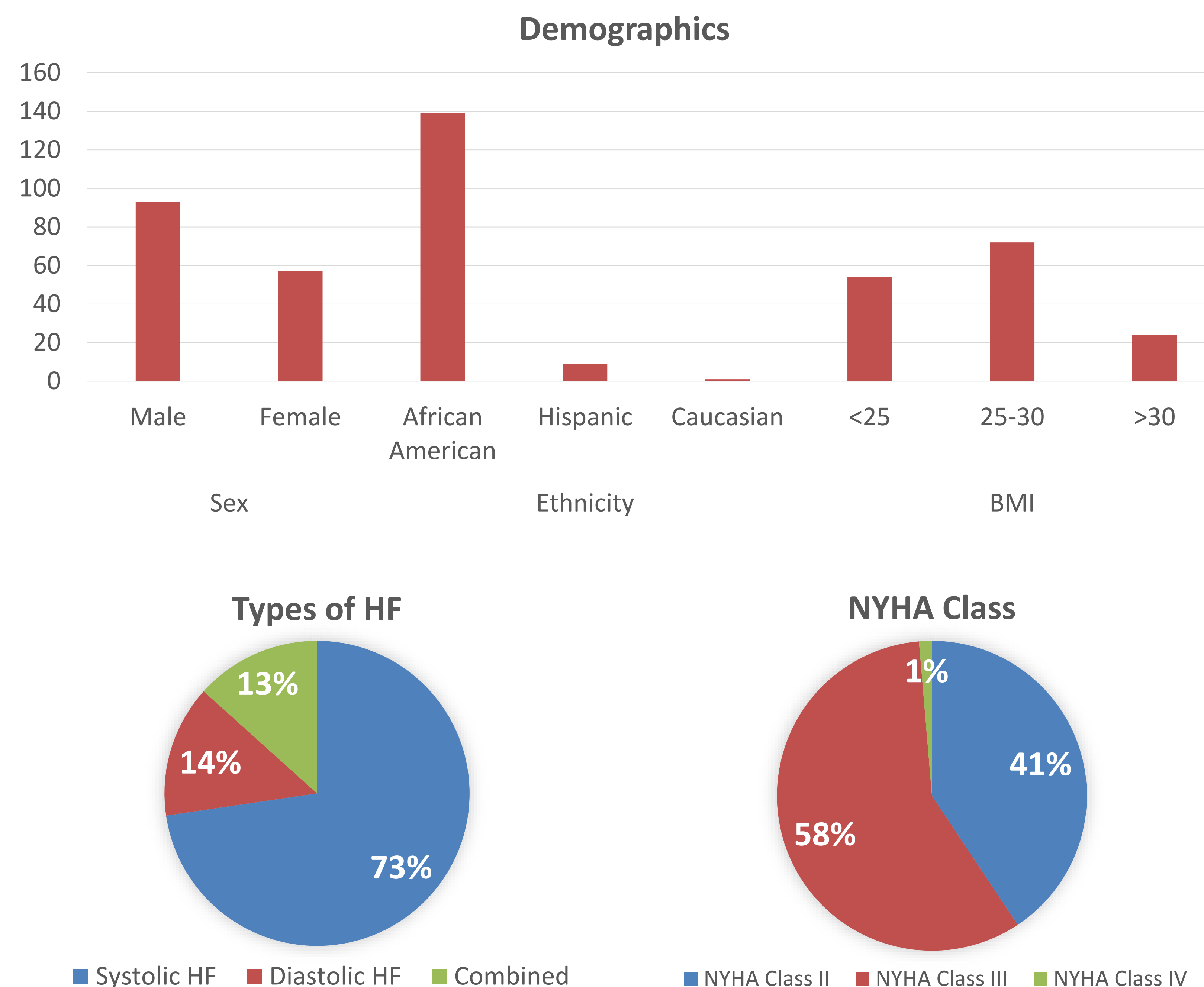


Background

Anemia is independently associated with increased mortality and hospitalizations in patients with both heart failure with reduced ejection fraction (HFrEF) and heart failure with preserved ejection fraction (HFpEF). The most common cause of anemia in patients with heart failure (HF) is iron deficiency anemia (IDA). However, even in the absence of anemia, nearly 50% of patients with HF, regardless of sex, race, anemia, and LVEF, have iron deficiency (ID). ID, independent of anemia, is associated with impaired oxidative metabolism, cellular energetics, and immune mechanisms that can cause structural and functional change in the myocardium, decreasing oxygen storage in myoglobin and reducing tissue oxidative capacity, leading to mitochondrial and left ventricular (LV) dysfunction. Therefore, ID but not anemia, remains a strong independent predictor of mortality in patients with HF. Several studies have shown that IDA in patients with HF is associated with reduced exercise capacity, impaired quality of life (QoL), and poor prognosis independently of anemia and LVEF. As a result, the 2017 AHA/ACC guidelines recommend intravenous iron replacement, "In patients with NYHA class II and III heart failure and iron deficiency (ferritin <100 µg/L or 100–300 µg/L if TSAT <20%) to improve functional status and QoL" with a Class IIb recommendation.

Methods

Retrospective chart review of randomly selected sample of 150 patients from the ACC clinic from 1/2017-1/2022 was performed to see if they were screened for iron deficiency defined as ferritin <100 µg/L OR 100–300 µg/L with transferrin saturation(TSAT)<20% and how Iron deficiency was treated. Additional variables such as sex, ethnicity, BMI were also collected. Inclusion criteria were as follows: all patients aged 18-75 with NYHA class II-IV heart failure. Exclusion criteria were as follows: any patient with significant liver disease (i.e.) cirrhosis, ESRD requiring IV iron, and/or active malignancy requiring IV iron. Statistical analysis was performed using Microsoft Excel statistical package.



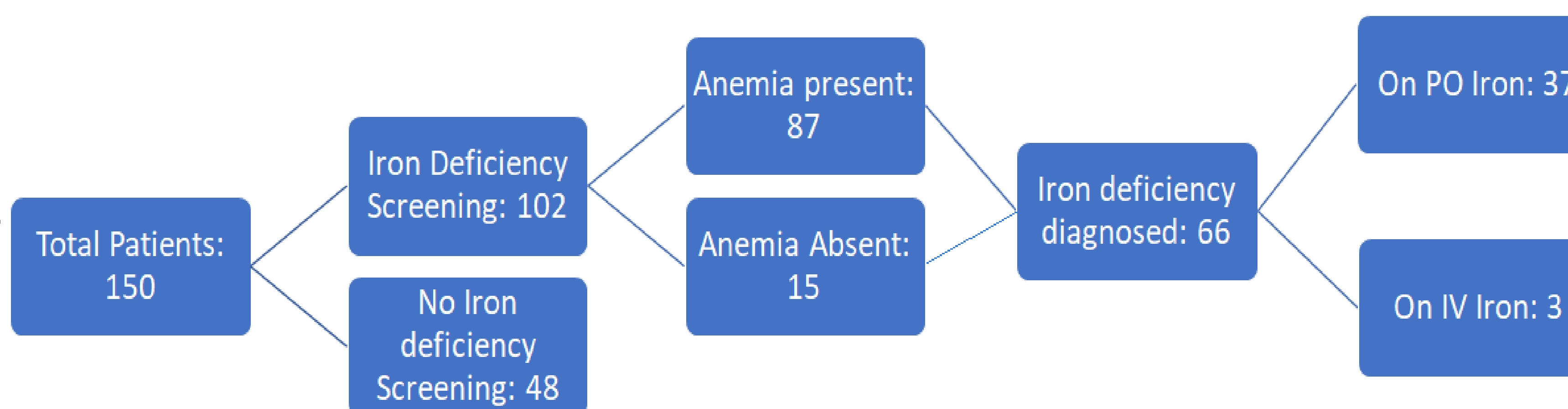
Results

Out of 150 patients, 93 were male and 57 were female; 139 were African American. 109 patients had systolic HF, 21 had diastolic HF while 20 had combined systolic and diastolic HF. The prevalence of anemia in our sample of 150 patients with HF was 76%. Only 68% of the 150 patients were screened for iron deficiency (ID) of which 65% met the criteria for ID based on the ferritin and TSAT levels. If the patient did not have anemia, then the screening rate for ID dropped to 42%. Once ID was identified, only 56% of ID patients were put on iron supplementation with 95% started only on PO iron while 5% were given both PO and IV iron. The most common IV iron formulation used was IV Venofer.

Conclusion

IDA is preventable, under-recognized and under-treated phenomena in patients with HF. FAIR-HF, the largest randomized study reported so far found that IV iron improved patients' global assessment and NYHA functional class (both P<0.001) along with improvement in QoL in iron deficiency in HF regardless of anemia. QoL and distance walked in 6 minutes (6MWD) also improved. A meta-analysis of 7 trials by Graham et al suggests that administration of IV iron to patients with HF and IDA maybe reduce the risk of recurrent hospitalization for HF and cardiovascular mortality. Most studies used IV iron as oral iron is not absorbed well in patients with HF. In summary, several studies provide encouraging data raising the possibility that intravenous but not oral iron therapy has a potential role in patients with HF and absolute or functional iron deficiency with or without anemia. Synopsis of results- Our findings suggest that not only are patients with HF in ACC clinic not adequately being screened for IDA, but they are also not being treated appropriately with intravenous iron therapy. Especially in HF patients without anemia, screening rates drop significantly. To evaluate the factors contributing to low screening rates and lack of IV iron use, we conducted a survey which will be discussed in our QA project.

Iron deficiency screening and treatment in HF patients



Citations:

- 1Sawicki KT, Ardehali H. Intravenous Iron Therapy in Heart Failure With Reduced Ejection Fraction: Tackling the Deficiency. *Circulation* (New York, NY). 2021;144(4):253-255. doi:10.1161/CIRCULATIONAHA.121.054271.
- 2Camaschella C. Iron-Deficiency Anemia. *The New England journal of medicine*. 2015;372(19):1832-1843. doi:10.1056/NEJMra1401038
- 3Yancy CW, Jessup M, Bozkurt B, et al. 2017 ACC/AHA/HFSA Focused Update of the 2013 ACCF/AHA Guideline for the Management of Heart Failure: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines and the Heart Failure Society of America. *Journal of the American College of Cardiology*. 2017;70(6):776-803. doi:10.1016/j.jacc.2017.04.025.

