



SHORT EDITORIAL

HFrEF, HFmrEF, and HFpEF: Are They a Continuum or Different Faces of a Syndrome?Even Edilce Mol,¹ Camila Hartmann,¹  Lídia Ana Zytynski Moura¹ *Pontifícia Universidade Católica do Paraná,¹ Curitiba, PR – Brazil**Short editorial referring to the article: Sociodemographic, Clinical Condition, and Functional Aerobic Capacity in Patients With Heart Failure With Varying Ventricular Ejection Fraction*

Heart failure (HF) is a significant and growing public health problem.¹ Recent projections have shown that the prevalence of HF in the United States will increase by 46% between 2012 and 2030.² This is driven by an increase in the life expectancy of the population combined with a reduction in mortality from the disease resulting from advances in therapies in recent years.

Of all the classifications of HF, the most used one is based on left ventricular ejection fraction (LVEF), which is categorized into three groups: HF with preserved ejection fraction (HFpEF) (LVEF \geq 50%), HF with reduced ejection fraction (HFrEF) (LVEF \leq 40%), and HF with moderate or mildly reduced ejection fraction (HFmrEF) (LVEF 41–49%).³ Although the prognosis appears to be similar among HF subtypes based on ejection fraction,^{4,5} there are differences between the groups in terms of clinical-epidemiologic profile and functional capacity.

An interesting study by Peña et al.⁶ recently published in the International Journal of Cardiovascular Sciences analyzed the sociodemographic, clinical, and functional capacity differences among the different subtypes of HF according to LVEF in a group of patients enrolled in a cardiac rehabilitation program. The study found significant differences in marital status, angina symptoms, body fat percentage, and resting blood pressure according to LVEF classification. The results reinforce the well-known, proven association between obesity, higher body fat percentage, and HFpEF.^{7,8} Higher systolic blood pressure at the end of the 6-minute walk test (6MWT) was also observed in the HFpEF group. These results corroborate literature data showing a higher prevalence of metabolic syndrome

in these patients.^{9,10} The finding of a higher prevalence of angina in the HFpEF patient group may be explained by the microvascular coronary endothelial inflammation with reduced nitric oxide bioavailability seen in this patient profile.^{11,12}

Regarding the sociodemographic variables, it is important to note that there was a significant number of men in all LVEF groups. However, women and older patients may be underrepresented in studies involving patients in cardiac rehabilitation programs because several psychosocial, economic, and physical factors influence adherence to physical activity. Competition for time to care for family and work in the case of women, and often the presence of functional limitations in the case of older patients, justify the lower participation of this population in rehabilitation programs.¹³

Some data found in patients with HFmrEF deserve special attention. This group of patients was characterized by a higher number of men, a younger mean age, a higher number of patients with a “stable union” marital status, a greater distance covered in the 6MWT, and a higher number of repetitions in the STS compared to the other groups. Compared to HFpEF and HFrEF, this LVEF range is less studied and there are still aspects that need to be clarified to understand this specific subgroup of patients.¹⁴ Patients with HFmrEF appear to have overlapping clinical characteristics, biomarkers, cardiac imaging findings, and clinical outcomes compared to patients with HFrEF and HFpEF. However, there is a trend toward greater similarity with patients with HFrEF.¹⁵ Patients with HFrEF and HFmrEF tend to be younger, have a higher prevalence of men, and have a higher prevalence of ischemic disease.¹ However, patients with HFmrEF have a lower mortality rate than patients with HFrEF, which is comparable to the mortality rate of patients with HFpEF.¹⁵

Keywords

Heart Failure; Cardiac Rehabilitation; Stroke Volume.

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Thus, future studies are needed not only to better characterize the population with HFmrEF but also to determine effective management strategies to reduce the high burden of morbidity and cardiovascular mortality in this phenotype of HF patients. Understanding the profile of these patients

is of paramount importance to better appreciate the nuances and differences between HF subtypes according to LVEF. This knowledge may help to answer the question in the future: Is HFmrEF an intermediate disease between HF_rEF and HF_pEF or a distinct clinical syndrome?

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