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HEArt failure Treatment patterns: A pharmacoepidemiological descriptive study in COlombia (the HEATCO study)

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Abstract

Introduction: Heart failure is a common condition associated with significant mortality. *Objective*: to determine the prescription patterns of medications for the treatment of heart failure in a cohort of patients from Colombia.
Methods: This was a retrospective study based on the clinical records of patients diagnosed with heart failure between 2019 and 2020. Sociodemographic, clinical, paraclinical, and pharmacological variables and the specialty of the treating physician were identified. Patients were classified according to functional class, stage, and left ventricular ejection fraction (LVEF).
Results: A total of 4742 patients were evaluated, with a mean age of 68.2±13.8 years and a male predominance (61.3%). A total of 92.0% were classified as stage C and 54.8% as functional class I, the mean LVEF was 42.9±14.8%, and 32.53% had reduced LVEF. 30.7% did not have LVEF data. The most common causes were ischemic heart disease (44.0%) and arterial hypertension (29.7%). A total of 5.2% had hospitalizations for heart failure in the last year, and 75.6% were attended by a general practitioner. These patients were treated with β-blockers (88.3%), renin-angiotensin-aldosterone system inhibitors (RAASis) (83.1%), loop diuretics (46.8%), and mineralocorticoid receptor antagonists (MRAs) (46.5%). Triple therapy with RAASis+β-blockers+MRAs was received by 56.4% of patients with reduced LVEF, 32.8% with mildly reduced LVEF and19.5% with preserved LVEF, while quadruple therapy adding a sodium-glucose cotransporter-2 inhibitor (SGLT2i) was given just to 4.6% with reduced LVEF.
Conclusion:
The treatment that patients with heart failure with preserved LVEF is relatively simpler and is closer to the recommendations, while the proportion of indicated therapies according to guidelines is lower among those with reduced LVEF.

Attachments

XLSX

DB-HEATCO.xlsx

2.3MB

Materials

Materials and methods

A descriptive, retrospective study was carried out on the prescription patterns of drugs used in the treatment of HF from a population-based drug dispensing database and clinical records. The prescriptions of adult patients diagnosed with HF from June 01, 2019, to May 31, 2020, were analyzed.

The initial information was obtained from the drug dispensing database of Audifarma S.A., the main pharmaceutical manager in Colombia for the delivery of institutional drugs to outpatients and hospital patients, including patients diagnosed with HF, according to the International Classification of Diseases, Tenth Revision (ICD-10), with the dispensing of some medications during the observation period in outpatient context. Subsequently, individuals who were affiliated with one insurer of the contributory scheme were selected (The insurer provided authorization for access to the clinical record), and their clinical records were reviewed for clinical variables of HF and comorbidities. No exclusion criteria were considered for this study.

From the information on the dispensing of drugs to the included population, the data from the electronic clinical records of the patients were obtained by a group of trained physicians. In addition, two researchers consolidated and validated the information for inconsistent data and errors. The following groups of variables were recorded:

- Sociodemographic:
  Sex, age, city where health care was sought, and department or region of the country (Bogotá-Cundinamarca, Caribbean region, Central region, Eastern region, Pacific region and Amazon-Orinoquía region)
- Diagnosis and comorbidities: Primary and secondary diagnoses of heart failure according to ICD-10 codes (I50.0; I50.1; I50.9; I11.0; I11.9; I13.0; I13.1; I13.2; I13.9; I42.0; I42.1; I42.2; I51.0; I51.1-I51.9). Each patient was identified according to the classification of a) the NYHA, b) the ACC/AHA, and c) reduced or preserved LVEF. Information on comorbidities was obtained during the entire observation period, including the etiology of heart failure.
- Hospitalizations: The

number of hospitalizations and visits to the emergency department during the study period was recorded from the outpatient primary care clinical record.

- Prescribing physician:
  The specialty of the prescribing physician was identified: general practitioner, internist, cardiologist, pulmonologist, or other.
- Symptoms and signs/paraclinical parameters: a) Symptoms and signs included dyspnea, fatigue, lower limb edema, etc. b) Paraclinical parameters included LVEF (reduced (HFrEF) ≤40%, Mildly reduced (HFmrEF) 41-49% and preserved (HFpEF) ≥50%, no data recorded) – (Left ventricular ejection fraction value was obtained from the report in the medical record of the first echocardiogram recorded during the observation period), creatinine and glomerular filtration rate (GFR), which was calculated by CKD-EPI equation.

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Drugs used for HF: The information of drugs used in the treatment of HF was collected, including active substance, mean dose, dosage form and frequency of use by LVEF classification. The defined daily dose (DDD) was used as the unit of measurement for drug use, according to the recommendations of the World Health Organization (WHO).

a. Comedications: The following were identified: a) antidiabetics, b) antihypertensives and diuretics, c) lipid-lowering agents, d) antiulcer agents, e) antidepressants, f) anxiolytics and hypnotics, g) thyroid hormone, h) antipsychotics, i) antiepileptics, j) analgesics and anti-inflammatories, k) bronchodilators and/or inhaled corticosteroids, l) antiplatelet agents, and m) anticoagulants, among others.

Statistical analysis

The data were analyzed with the statistical package SPSS Statistics, version 28.0 for Windows (IBM, USA). A descriptive analysis was performed with frequencies and proportions expressing qualitative variables and central trend and dispersion measures for quantitative variables. For quantitative variables, normality was initially tested using the Kolmogorov–Smirnov test; for those variables with a normal distribution, means and standard deviations are reported, and for those with asymmetrical distribution, medians and interquartile ranges are reported. A division of the sociodemographic, clinical, and comorbidity characteristics was made according to LVEF. Regarding the use of medications, the average dose, relationship with the daily dose defined by the WHO, and frequency of use by LVEF classification

were identified for those prescribed for HF. UpSet library version 0.6.1 in Python was used to generate the combined drug consumption figure.[10]