



## Introduction

Half of the patients with heart failure have preserved ejection fraction (HFpEF). HFpEF has been a challenging condition to treat as no single pharmacotherapy is approved for its management. Over the years, guidelines have been recommended for or against different medications for the management of HFpEF. However, there is limited evidence on trends in the utilization of such medications in HFpEF.

**This study aimed to examine the trends of utilization rates of pharmacotherapy for 13 years from 2008 to 2020 among HFpEF.**

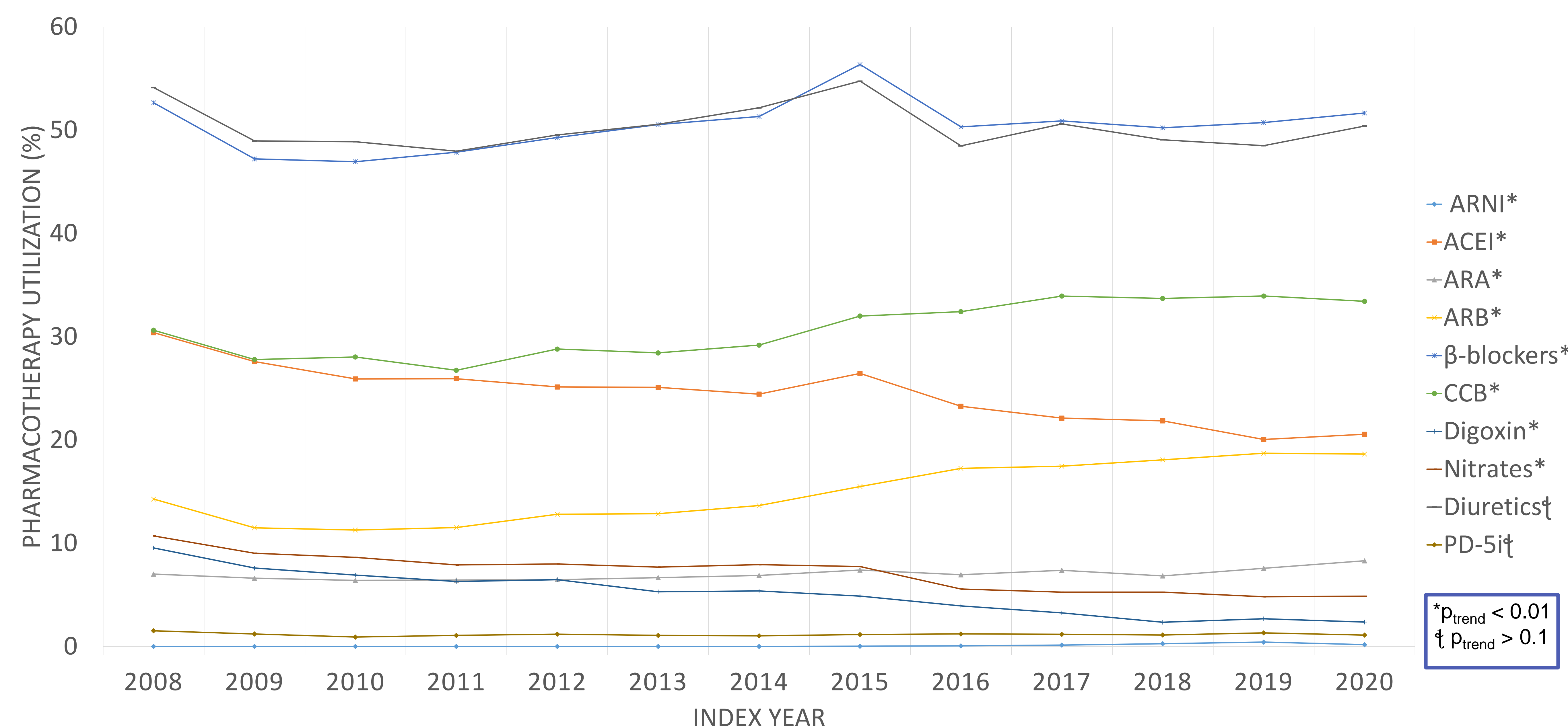
## Methods

- **Study Design:** Retrospective Cohort Study
- **Data Source:** IBM® MarketScan® claims databases
- **Study Period:** 01-01-2007 to 12-31-2020
- **Inclusion Criteria:** Patients were included if they were aged  $\geq 18$  years, had HFpEF (identified via ICD-9/ICD-10 codes) diagnosis. Patients were required to have 6 months pre- (baseline period) and 3 months post-index continuous enrolment in the health plan.
- **Exclusion Criteria:** Patients who had any HF-related diagnosis in the baseline period and one-month post-index period.
- **Index date:** Diagnosis date of HFpEF
- **Study drug classes:** ACEI, ARB, ARA, ARNI, diuretics,  $\beta$ -blockers, CCB, PD-5i, nitrates, digoxin
- **Outcome:** Utilization rates calculated as the proportion of patients utilizing any of the study drug classes among patients with HFpEF in a year
- **Statistical Analysis:** Multivariable Poisson regression models, to determine adjusted utilization trends over the study period

## Results

- We identified 156,730 patients with HFpEF (53% women).
- From 2008 to 2020, we observed upward trends in the utilization of ARNI (0.02% vs. 0.17%,  $p < 0.01$ ), ARB (14.3% vs. 18.6%,  $p < 0.01$ ), ARA (7.0% vs. 8.4%,  $p < 0.01$ ), and CCB (30.6% vs. 33.4%,  $p < 0.01$ ).
- We observed downward trends in the utilization of ACEI (30.4% vs. 20.5%,  $p < 0.01$ ), digoxin (9.5% vs. 2.4%,  $p < 0.01$ ), nitrates (10.7% vs. 4.9%,  $p < 0.01$ ) diuretics (54.1% vs. 50.4%,  $p = 0.20$ ), and  $\beta$ -blockers (52.6% vs. 51.7%,  $p < 0.01$ ) while utilization rates of PD-5i (1.5% vs. 1.1%,  $p = 0.90$ ) remained stable from 2008 to 2020 (**Figure 1**).

**Figure1: Overall adjusted utilization trends of pharmacotherapy within 90 days of heart failure with preserved ejection fraction diagnosis**



**Conclusion: From 2008-2020, the utilization of ARNI, ARB, ARA, and CCB increased but utilization of digoxin, nitrates, diuretics, and  $\beta$ -blockers decreased in patients with HFpEF and utilization of PD-5i remained stable.**

## Strengths

- First real-world determination of utilization trends of pharmacotherapies among patients with HFpEF over a period of 13 years.
- Large commercial database representative of the US population covered under employer-based medical insurance.
- Trends were adjusted for individual patient's characteristics.

## Limitations

- Data on lab values, and race/ethnicity were not available to analyze.
- Prescription fill data was used, hence, there was no way to ascertain that the patients took medication.
- The patients included in this study had private and Medicare Advantage plans; thus, our findings may not be generalizable to patients with other health insurance plans or to patients without insurance.

Abbreviations: ACEI = angiotensin-converting enzyme inhibitor; ARA = aldosterone antagonist; ARB = angiotensin receptor blocker; ARNI = angiotensin receptor-neprilysin inhibitor; CCB = calcium channel blockers; HF = heart failure; HFpEF = heart failure with preserved ejection fraction; PD-5i = phosphodiesterase-5 inhibitors; US = United States.

Follow on Twitter: @RiazMunaza @UFCoDES

Contact Email: m.riaz@ufl.edu

