Trends in hospitalization and in-hospital mortality of patients with heart failure in Spain. A population-based study (2003–2015)

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Background: Heart failure (HF) is one of the most pressing current public health concerns. However, in Spain there is a lack of population data.
Purpose: To investigate trends in HF hospitalization and in-hospital mortality rates.
Methods: We conducted a retrospective observational study of patients discharged with the principal diagnosis of HF from The National Health System' acute hospitals during 2003–2015. The source of the data was the Minimum Basic Data Set of the Ministry of Health, Consumer and Social Welfare. We analyzed trends in hospital discharge rates for HF (discharge rates were weighted by age and gender) an in-hospital mortality. The risk-standardized in-hospital mortality ratio (RSMR) was defined as the ratio between predicted mortality (which individually considers the performance of the hospital where the patient is attended) and expected mortality (which considers a standard performance according to the average of all hospitals) multiplied by the crude rate of mortality. RSMR was calculated using a risk adjustment multilevel logistic regression models developed by the Medicare and Medicaid Services. Temporal trend during the observed period was modelled using Poisson regression analysis with year as the only independent variable. In this model, the incidence rate ratio (IRR) and their 95% confidence intervals (95% CI) was calculated.

Results: A total of 1 254 830 episodes of HF were selected. Throughout 2003–2015 the number of hospital discharges with principal diagnosis of HF increased by 61% (IRR: 1.04; CI: 1.03–1.04; $p<0.001$), meanwhile the crude mortality rate and the mean length of stay (LOS) diminished significantly (IRR: 0.99; CI: 0.98–1; and IRR: 1.04; CI: 0.99–0.99; $p<0.001$, for both). Discharge rates weighted by age and sex showed a statistically significant increase during the period (IRR: 1.03; CI: 1.03–1.03; $p<0.001$); however, whereas discharge rates increased significantly in older groups of age ($\geq$75 years old) (IRR: 1–1.02; $p<0.001$) they diminished in younger groups of age (45–74 years old) (IRR: 0.99; $p<0.001$ and there was not a significant trend in the discharge rates for the group of 35–44 years old (Figure). The risk-standardized in-hospital mortality ratio did not significantly change throughout 2003–2015 (IRR: 0.997; CI: 0.992–1; p=0.32), however the risk-standardized LOS ratio diminished from 1.07 in 2003 to 0.97 in 2015 (IRR: 0.98: IC: 0.98–0.99; $p<0.001$).
Conclusions: From 2003 to 2015, HF admission rate increased significantly in Spain as a consequence of the sustained increase of hospitalization in the population over 75. The crude in-hospital mortality rate diminished significantly for the same period, but the risk-standardized in-hospital mortality ratio did not significantly change.

Figure. Time trends in heart failure discharge rates weighted by age and sex

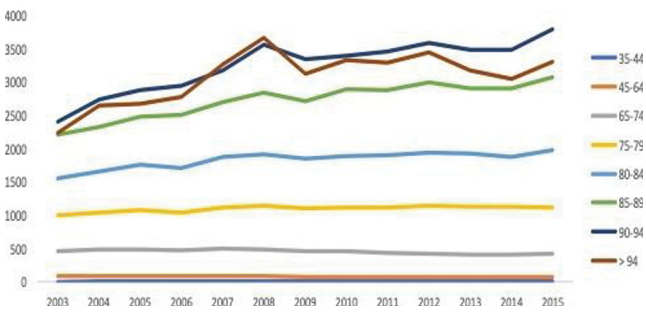

Figure 1