

Letters to the Editor

Analysis of Hospitalization Trends for Heart Failure in the Health Registries of Different Autonomous Communities



Análisis de los ingresos hospitalarios por insuficiencia cardíaca en registros sanitarios de diferentes comunidades autónomas

To the Editor,

We read with interest the article by López-Messa et al.¹ Although the time frame of their study is slightly longer and covers a greater number of conditions, it shares some aspects with our work published in *Revista Española de Cardiología*² on the population of the Region of Murcia (RM). Both studies address hospitalizations for heart failure with the same tool–joinpoint regression—and both show a growing trend with an inflection point in 2007 (Figure). This finding is of interest because the same change is shown by 2 nonbordering autonomous communities with the same health care system.

Although it is true that crude rates are the only true rates, in processes mainly affecting a specific population group (eg, older than 64 years) that is increasing and whose weight, in the total population, varies greatly among autonomous communities (representing 14.5% in the RM in 2013 and 23.3% in Castile and León), the results should be standardized by age and sex. Such standardization allows elimination of the influence of both factors and a comparison of distinct populations. In 2013, hospitalizations (crude rates) comprised 2.26/1000 population in the RM and 3.39/1000 population in Castile and León. If the RM had the same population structure

as Castile and León, its hospitalizations (standardized) would have been 3.95/1000 population, a figure that reverses the conclusion of the comparison. Thus, standardization is essential before results can be compared. In addition, our study included hospitalizations funded by the Spanish National Health System in public-private hospitals (which increased the total number of admissions in the period by 5.4%) and calculated health care episodes by taking into account transfers between hospitals (which decreased total admissions by 1.5%). Although this last factor has little effect on this condition in the RM, it is more important in others (between 3% and 10% for ischemic stroke³ and between 13% and 24% for acute myocardial infarction and unstable angina⁴).

Given the importance of between-population comparisons, a useful addition would be the development of other simple indicators that can complement the current ones. One of these could be the rate of individual patients generating the hospitalizations.⁵ In Spain, the rate of patients hospitalized for heart failure varied between 1.1 and 1.8/1000 population between 2003 and 2013, and its trend also showed an inflection point in 2007. However, the annual percentage increase was less than that of hospitalizations in both periods and ceased to be statistically significant from 2007 (Figure), which would reflect the weight of persons with recurrent admissions.

Independently of these considerations, both studies agree on the importance of researching population indicators and their trends (eg, hospitalizations, hospital readmissions independent of hospital discharge, survival), particularly given that this statistical information is accessible with appropriate reliability and can permit the design, implementation, and comparative assessment

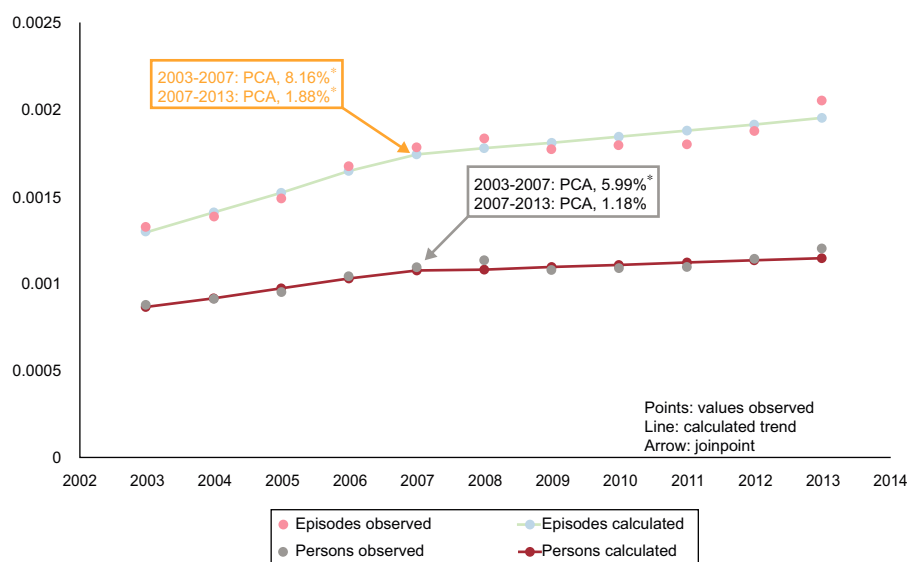


Figure. Persons hospitalized for heart failure and hospitalizations generated in the Region of Murcia. Joinpoint regression tendency, with rates standardized by the standard European population. APC, annual percentage of change.

*Slope with significant differences ($P < .05$).

of preventive and health care policies adapted to each population setting.⁶

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REFERENCES

1. López-Messa JB, Andrés-de Llano JM, López-Fernández L, García-Cruces J, García-Crespo J, Prieto González M. Trends in Hospitalization and Mortality Rates Due to

- Acute Cardiovascular Disease in Castile and León, 2001 to 2015. *Rev Esp Cardiol*. 2017. <http://dx.doi.org/10.1016/j.recresp.2017.03.033>.
2. Fernández Gassó ML, Hernando-Arizaleta L, Palomar-Rodríguez JA, Soria-Arcos F, Pascual-Figal DA. Trends and Characteristics of Hospitalization for Heart Failure in a Population Setting From 2003 to 2013. *Rev Esp Cardiol*. 2017;70:720–726.
3. Atención a la Patología Cerebrovascular. Región de Murcia, Indicadores 2008–2014. Informes sobre el Sistema Regional de Salud 1523. Murcia: Consejería Sanidad; 2015. Available at: http://www.murciasalud.es/publicaciones.php?op=mostrar_publicacion&id=2355&idsec=88. Accessed 21 Aug 2017.
4. Atención a la Cardiopatía Isquémica. Región de Murcia, Indicadores 2002–2014. Informes sobre el Sistema Regional de Salud 1529. Murcia: Consejería Sanidad; 2015. Available at: http://www.murciasalud.es/publicaciones.php?op=mostrar_publicacion&id=2371&idsec=88. Accessed 21 Aug 2017.
5. Roger VL. The changing landscape of heart failure hospitalizations. *J Am Coll Cardiol*. 2013;61:1268–1270.
6. Anguita Sánchez M, Lambert Rodríguez JL, Bover Freire R, et al. Classification and Quality Standards of Heart Failure Units: Scientific Consensus of the Spanish Society of Cardiology. *Rev Esp Cardiol*. 2016;69:940–950.

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Analysis of Hospitalization Trends for Heart Failure in the Health Registries of Different Autonomous Communities. Response



Análisis de los ingresos hospitalarios por insuficiencia cardiaca en registros sanitarios de diferentes comunidades autónomas. Respuesta

To the Editor,

Rate adjustment is a technique to control for the effect that the various age structures of different populations¹ may have on morbidity and mortality rates over time, while providing a summary index of age-specific mortality rates.²

However, the choice of the reference population to use when standardizing rates by age can change the trends of the adjusted rates. For example, a study on cancer mortality in the United States indicated that between 1980 and 1988 age-adjusted mortality decreased by 0.1% when the 1940 population was used as the reference, increased by 1.5% when the 1980 population was used, and increased by 2.5% when the projected 2050 population was used.³

Another limitation of age adjustment is that it is not appropriate when the specific rates in the populations being compared do not show a consistent relationship.²

When 2 populations are compared, the specific case rates occurring in advanced ages have a much higher value than those occurring in young ages.⁴ That is, it may not be correct to compare age-adjusted rates if the specific rates by age of one population are concentrated in a single group (very elderly persons), whereas in the other population mortality stratified by age is more evenly distributed or affects younger age groups.

In the case of the autonomous region of Castilla and León, the distribution by age groups did not change substantially from 2001 to 2015, and at the same time, hospitalization rates for heart failure over the entire period were concentrated in persons older than 80 years (median 82 years). Therefore, standardized age rates were not presented so as not to provide information that would confuse more than clarify, particularly when the aim was to

evaluate changes in the trends of hospitalization rates and in-hospital mortality.

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REFERENCES

1. López-Messa JB, Andrés-de Llano JM, López-Fernández L, García-Cruces J, García-Crespo J, Prieto González M. Evolución de las tasas de hospitalización y mortalidad hospitalaria por enfermedades cardiovasculares agudas en Castilla y León, 2001–2015. *Rev Esp Cardiol*. 2017. <http://dx.doi.org/10.1016/j.recresp.2017.03.033>
2. Curtin LR, Klein RJ. Direct standardization (age-adjusted death rates). Atlanta: Centers for Disease Control and Prevention. *Healthy People 2000 Stat Notes*. 1995;6:1–10.
3. Llorca Díaz J, Prieto Salceda D, Dierssen Sotos T, Delgado-Rodríguez M. Comparación entre varias poblaciones estándar para el ajuste por edades. *Rev Esp Salud Pública*. 2000;74:341–350.
4. Rué M, Borrell C. Los métodos de estandarización de tasas. *Revisión en Salud Pública* 3. Barcelona: Masson; 1993:262–295.

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