

## Editorial



# The Long Journey to Obtaining the Epidemiological Data of Heart Failure in Korea

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### Conflict of Interest

The author has no financial conflicts of interest.

There have been continuous efforts to obtain epidemiologic data on heart failure (HF) in Korea. Four representative HF registries have been conducted simultaneously from 1987 until 2011. The Hallym HF registry is considered the first report on the epidemiology of HF in Korea.<sup>1)</sup> It was a retrospective cohort study involving 4 hospitals between 1987 and 1997 (n=1,657). Despite the long duration of follow-up and discrete prognosis according to the etiology of HF, the study had inherent limitations owing to its retrospective design. The subsequent study, the Korean Multicenter HF study, was a prospective, observational, multicenter registry from 9 hospitals and involved patients with acute HF between 1998 and 2003 (n=1,759).<sup>2)</sup> It was funded partly by the Korean Society of Cardiology and reported the cumulative 2-year mortality rate to be 76.4%. Subsequently, the Korean Heart Failure (KorHF) registry was conducted for patients with acute HF from 2004 to 2009.<sup>3)</sup> It was a national, observational, prospective, multicenter registry from 24 hospitals (n=3,200). It reported longer cumulative survival rates by 4 years after discharge. The Korean Society of Circulation equally supported the study in celebration of its 50th Anniversary. Finally, the Korean Acute Heart Failure (KorAHF) registry gathered the data of patients with acute HF from 2011 to 2014.<sup>4)</sup> It was also a prospective, observational, multicenter cohort study from 10 hospitals and was supported by Research of Korea Centers for Disease Control and Prevention (n=5,625). This study strictly predefined variables and clinical events and an independent committee audited the data, which provided more accurate data collection. These serial registries showed temporal changes in demographics, management, and clinical outcomes of patients hospitalized for HF in Korea. Moreover, over the years, the studies included more patients and longer follow-up duration and outcomes. Through the support of the society and the government, the studies have also expanded in scale. However, except for the KorHF registry, the other studies were limited by the fact that data were collected from only some centers around 10 or tertiary university hospitals, which do not reflect the nationwide actualities of HF in Korea.

Meanwhile, as epidemiological research using big data became possible, interest in health insurance data increased. Using data from the National Sample Cohort (NSC), the nationwide prevalence of HF in Korea was first reported in 2016.<sup>5)</sup> As is well known, the prevalence of HF approximately doubled from 0.75% in 2002 to 1.53% in 2013. The NSC was derived from the National Health Insurance Service (NHIS) with which more than 97% of people are affiliated and consisted of approximately 2% of the entire nation. Thus, the study

showed more nationwide epidemiology, but was also limited by the fact that it did not study the entire nation.

The newly published Korea HF fact sheet 2020 is the first official HF statistics supported by the Korean Society of Heart Failure.<sup>6)</sup> The authors used the National Health Information Database (NHID) of NHIS that included 25% random-sampling data of the entire Korean population from 2002 to 2018. They showed epidemiologic data from NHID such as prevalence, incidence, mortality, comorbidities, medications, and costs. Even though there was a risk of bias from the sampling like the under- or over-estimation of HF due to lack of or wrong diagnostic codes of HF, this study is very meaningful in that it conducted an analysis of more patients over a longer period of HF compared to previous epidemiologic studies demonstrating the realities of HF in Korea.<sup>7)</sup> Besides, the claim data of the NHID did not include detailed information for some parts. Thus, the authors added data from the KorHF or KorAHF registries, or data from the Korean Network for Organ Sharing in case of in-hospital mortality, classification by ejection fraction, etiologies of HF, or the rate of heart transplantation, which are not covered by NHIS. Moreover, they compared data from the NHID and the previous registries for comorbidities, medications, and cost.

In this Korea HF fact sheet, the prevalence of HF in Korea increased in the last two decades and showed similar trends to the data from the NSC. However, the age-adjusted incidence of HF has been decreasing over time. The authors suggested the improved treatment of myocardial infarction or ischemic heart disease as the cause of this decrease in HF incidence. We may infer the final decrease of HF prevalence in the future. However, considering the aging process in Korea, it is expected that the prevalence of HF in Korea will not decrease for the time being. In addition, the crude and age-adjusted incidence of inpatients with HF increased. Moreover, the mortality, comorbidities, and costs increased over time. These results suggest that the severity of HF may become high. This is supported by the steadily increased number of heart transplantations. Thus, in the future, more focus on treatments that decrease the severity of HF or advanced HF may be required in the distribution of medical resources.

This study is valuable as it includes all existing large epidemiologic data in Korea, even though a registry or database for all nations to be included and containing accurate epidemiologic data are needed in the future. The next challenge will be to look for method of continuously updating the large epidemiologic data like that in this study, not once, in order to monitor the changes of Korean HF. This fact sheet, which integrated all information related to HF available so far, will be a new step to the final destination of the long journey to get epidemiological data on HF in Korea.

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