

Editorial

Globe is Still Heterogenous from the Perspective of Heart Failure

NAOKO P. KATO, RN, PhD,^{1,2} AND KOICHIRO KINUGAWA, MD, PhD³

Sweden; and Japan

In an era of an increasing number of patients with heart failure (HF) patients and increasing economic burden, mainly owing to HF readmissions worldwide, international collaboration studies focusing on patients hospitalized for HF and clinical outcomes are extremely important, which provides new insights into transitional care from hospital to home in the context of HF management in each country. In this issue of the Journal Sundaram et al,¹ have reported marked variations in characteristics of the patients with HF, health care resource use and clinical outcomes using nationally representative electronic health care records on 413,385 patients from the United States, the UK, Taiwan, and Japan.

Interestingly, there were differences in characteristics of patients hospitalized for HF among the 4 countries. In the United States and the UK, more patients with HF had chronic kidney disease (40% and 34%) and were obese (18% and 11%). In addition, 56% in Taiwan and 44% in the United States had diabetes mellitus. Chronic kidney disease and diabetes mellitus are among the most common comorbidities in HF. The prevalence of these comorbidities reported in the study are relatively higher than that reported in HF clinical trials, suggesting that the obtained data can be more generalized to

patients in the real-world clinical practice.² Comorbidity can alter biologic response to medical therapy and influence a patient's level of engagement in self-care.³ Therefore, the contents of HF management should be tailored according to the patients' characteristics, particularly multiple comorbidities in each country.

Moreover, study patients in Japan and the UK were older (mean age, 79 years), and in-hospital mortality rates in the 2 countries were highest even after age standardization. The higher in-hospital mortality rates might partly be attributed to the fact that more frail patients with HF and/or patients with more severe HF were included in the UK and Japan. Although frailty was not assessed in the study, it is common in older patients with HF, with an estimated prevalence of approximately 45%. Frailty has an important prognostic role in patients with HF as it is associated with increased risk of mortality and hospitalization, as well as a poor quality of life.⁴ The identification of frailty and a tailored and individualized health care program are therefore of importance in patients with HF.⁵ Because there was no detailed information on severity of HF such as left ventricular ejection fraction, B-type natriuretic peptide levels, or New York Heart Association functional classification in the present study, we cannot know the impact of HF severity on the clinical adverse outcomes, which would be one of the weakest points in the present study.

In the study by Sundaram et al,¹ the median length of hospital stay and 30-day readmission rate varied among the 4 countries. For example, the United States had the shortest stay (median, 4 days) and Japan had the longest stay (median, 17 days). In the UK, the United States, and Taiwan approximately 1 in 5 patients were readmitted within 30 days of discharge; meanwhile, the 30-day all-cause readmission rate was 12% in Japan. These findings suggest that, when the patients with HF are discharged from hospital, the degree of

DOI of original article: <http://dx.doi.org/10.1016/j.cardfail.2021.08.024>

From the ¹From the Department of Health, Medicine and Caring Sciences, Division of Nursing Sciences and Reproductive Health, Linköping University, Sweden; ²The Second Department of Internal Medicine, University of Toyama, Japan and ³The Second Department of Internal Medicine, University of Toyama, Japan.

Manuscript received October 22, 2021; revised manuscript accepted October 22, 2021.

Reprint requests: Naoko P. Kato Department of Health, Medicine and Caring Sciences, Division of Nursing Sciences and Reproductive Health, Linköping University SE-581 83 Linköping, Sweden Tel: +46 (0) 11-363117 E-mail: naoko.perkio.kato@liu.se 1071-9164/\$ - see front matter

© 2021 The Author(s). Published by Elsevier Inc. This is an open access article under the CC BY license

<http://creativecommons.org/licenses/by/4.0/>

<https://doi.org/10.1016/j.cardfail.2021.10.018>

vulnerability of the patients is different among these countries, and transitional care interventions should be tailored according to the patients' conditions such as severity of HF and precipitating factors. Transitional care interventions assist the continuity of care after discharge. Effective discharge interventions include detailed discharge summaries and early prearranged and structured physician and/or HF nurses follow-up.^{6,7} In a systematic review by Van Spall et al,⁸ nurse home visits and multidisciplinary HF clinics including HF nurses, cardiologists, geriatricians, dietitians, and/or physiotherapist were found to decrease all-cause readmissions compared with usual care. Because patients with HF in the United States are considered to be most vulnerable at hospital discharge, high-intensity transitional care interventions are of high importance during the early postdischarge period.⁹

Japanese patients hospitalized for HF were shown to stay at hospital more than 2 weeks in the present study, which may reflect that HF medication is optimized, and the patients' conditions are stable, and therefore the readmission rate might be low in Japanese patients compared with the patients in other countries.¹⁰ Considering of the longer length of hospital stay, in-hospital transitional care interventions could be effective in Japan. In a randomised controlled trial by Kato et al,¹¹ in-hospital self-care education was associated with a lower risk of readmissions for HF in Japanese patients with HF. However, it is important to note that a longer length of stay in hospitals is always related to higher medical cost, as the present study showed. A combination model of the shorter length of hospital stay and more intensive postdischarge service may be effective in terms of medical costs as well as the patients' outcomes.

Regarding factors predicting 30-day readmissions, results from the United States and Japan were similar and consistent with previous findings. For example, chronic kidney disease and atrial fibrillation are well-known as risk factors for an early readmission in HF.¹² In contrast, data from the UK and Taiwan were not consistent with previous studies, which might be explained by differences in patient's characteristics such as older age, multicomorbidities, and severe HF, as well as insufficient adherence to HF treatment. HF treatment includes nonpharmacologic interventions such as cardiac rehabilitation. No information on HF treatment was provided in the study.

Future Directions

Because of the differences in the health care system and insurance among countries, a universal model for the effective management of HF could

not be created. However, a similar strategy could be used for the effective transition from hospital to home. It would be helpful to use a clinical pathway with the aims (1) to promote optimization of guideline-directed medical therapy for HF, (2) to implement cardiac rehabilitation as soon as the clinical state allows it, (3) to identify risk factors contributing to rehospitalization including frailty, comorbidity, and insufficient adherence to self-care, and (4) to provide a tailored physical and psychosocial support.¹³ The clinical pathway could shorten a length of hospital stay, decrease the rate of readmissions, and improve patient-reported outcomes. Furthermore, care transition is more important for patients with severe HF.⁷ In many developed countries, in the near future, more patients with severe HF will be expected to stay at home while receiving necessary medical and nursing care, because this could contribute to improving the patient's quality of life and decreasing medical costs.¹⁴ Thus, there is a growing interest on the effective transition of care program and home management in patients with moderate or severe HF. During the COVID-19 pandemic, the implementation of telemedicine was accelerated and face-to-face medical interventions were partly transitioning to the virtual setting by using telemedicine.¹⁵ Telemedicine is expected not only to improve health care accessibility, but also to enhance the patient's engagement in self-care and clinical outcomes.¹⁶ Future study is necessary to develop and implement an effective home management program for patients with HF using eHealth technology according to the patient's characteristics and health care system in each country.

References

1. Sundaram V, Nagai T, Chiang C-E, Hospitalization for Heart Failure in the United States, UK, Taiwan, and Japan: An International Comparison of Administrative Health Records on 413,385 Individual Patients.
2. Khan MS, Samman Tahhan A, Vaduganathan M. Trends in prevalence of comorbidities in heart failure clinical trials. *Eur J Heart Fail* 2020;22:1032–42.
3. Kato N, Kinugawa K, Ito N. Adherence to self-care behavior and factors related to this behavior among patients with heart failure in Japan. *Heart Lung* 2009;38:398–409.
4. Wang X, Zhou C, Li Y. Prognostic value of frailty for older patients with heart failure: a systematic review and meta-analysis of prospective studies. *Biomed Res Int* 2018;2018:8739058.
5. Vitale C, Uchmanowicz I. Frailty in patients with heart failure. *Eur Heart J Suppl* 2019;21 (Suppl L):L12–16.
6. Vedel I, Khanassov V. Transitional care for patients with congestive heart failure: a systematic review and meta-analysis. *Ann Fam Med* 2015;13:562–71.
7. Tsutsui H, Ide T, Ito H. JCS/JHFS 2021 guideline focused update on diagnosis and treatment of acute and chronic

- heart failure. *J Card Fail* 2021 Sep 28. <https://doi.org/10.1016/j.cardfail.2021.04.023>. [Epub ahead of print].
8. Van Spall HGC, Rahman T, Mytton O. Comparative effectiveness of transitional care services in patients discharged from the hospital with heart failure: a systematic review and network meta-analysis. *Eur J Heart Fail* 2017;19:1427–43.
 9. Albert NM, Barnason S, Deswal A. Transitions of care in heart failure: a scientific statement from the American Heart Association. *Circ Heart Fail* 2015;8:384–409.
 10. Kato N, Kinugawa K, Imamura T. Trend of clinical outcome and surrogate markers during titration of β -blocker in heart failure patients with reduced ejection fraction: relevance of achieved heart rate and β -blocker dose. *Circ J* 2013;77:1001–8.
 11. Kato NP, Kinugawa K, Sano M. How effective is an in-hospital heart failure self-care program in a Japanese setting? Lessons from a randomized controlled pilot study. *Patient Prefer Adherence* 2016;10:171–81.
 12. Ahmed A, Ullah W, Hussain I. Atrial fibrillation: a leading cause of heart failure-related hospitalizations; a dual epidemic. *Am J Cardiovasc Dis* 2019;9:109–15.
 13. Hollenberg SM, Warner Stevenson L, Ahmad T. 2019 ACC expert consensus decision pathway on risk assessment, management, and clinical trajectory of patients hospitalized with heart failure: a report of the American College of Cardiology Solution Set Oversight Committee. *J Am Coll Cardiol* 2019;74:1966–2011.
 14. Jones CD, Bowles KH, Richard A. High-value home health care for patients with heart failure: an opportunity to optimize transitions from hospital to home. *Circ Cardiovasc Qual Outcomes* 2017;10:e003676.
 15. Silva-Cardoso J, Juanatey JRG, Comin-Colet J. The future of telemedicine in the management of heart failure patients. *Card Fail Rev* 2021;7:e11.
 16. Kato NP, Johansson P, Okada I. Heart failure telemonitoring in Japan and Sweden: a cross-sectional survey. *J Med Internet Res* 2015;17:e258.