

## LETTER TO THE EDITOR

# Letter by Norris-Grey et al Regarding Article, “Multiple Vulnerabilities to Health Disparities and Incident Heart Failure Hospitalization in the REGARDS Study”

*To the Editor:*

We read with interest the article by Pinheiro et al exploring the relationship between socially determined vulnerabilities (SDVs) and heart failure (HF) hospitalization.<sup>1</sup> The article should be applauded for investigating the effects of cumulative SDVs, which are more likely to occur in clusters. This approach gives a better reflection of the real-life effects SDVs have on the risk of HF hospitalization and proposes a simple method of identification of SDVs by health care professionals to identify at-risk patients.

We were interested to see that of the 10 SDVs analyzed using bivariate analysis, only 6 were deemed significant and included in the SDV count used in later Cox regression models. We would like to question the use of bivariate analysis as a method of prefiltering variables before further analysis. Although we recognize this is a common statistical tool often used by data scientists, it comes with the risk of excluding variables that seem nonsignificant on bivariate analysis but may become significant on later analysis because of interaction with other variables. This is especially important as the authors described how SDVs can cluster, indicating the possibility of confounding, which cannot be controlled for on bivariate analysis.

Deek et al<sup>2</sup> have recently shown that health education interventions can reduce mortality of patients with HF in Lebanon. The observed effect remained for a long period of time after the implementation of a single educational intervention. Given this effect, it would be interesting to explore whether health education interventions are a routine part of clinical care in the hospitals included in the study by Pinheiro et al, and whether the number of SDVs has an impact on the delivery or efficacy of such interventions. For example, Deek et al identified family members as an important part of the delivery of education to patients with HF, which may suggest that social isolation impacts the efficacy of educational interventions.

Data from Fu et al<sup>3</sup> looking into the relationship between compliance of quality indicators and health expenses in China revealed a negative correlation at the extreme quantile of expenses. It can be argued that SDVs may reduce compliance to quality indicators as SDVs act as a barrier to adequate quality of care. At extreme hospitals expenses further measures should therefore be taken to improve quality of care and to identify SDVs.

Considering the current climate, it is important to interpret these results going forward into a post–coronavirus disease world. Frankfurter et al observed a decrease in the number of Emergency Department visits and hospitalizations because of acute decompensated HF from March 2020 to April 2020 compared with the same period in 2019.<sup>4</sup> A trend was found toward higher inpatient mortality of these patients. One possible explanation is the potential increase in the numbers of SDVs for individual patients because of the social and economic effects

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of coronavirus. These SDVs could provide barriers to accessing timely medical care. If this is the case, we can expect an increase in the rates of hospitalization and mortality for patients with HF in the coming months.

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## ARTICLE INFORMATION

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### Disclosures

None.

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