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Peer reviewed

Supine heart rate measurement in elderly Chinese

Ian G.Y. Wong and Benjamin K.P. Woo

We enthusiastically read the article by Li *et al.* [1], 'Resting heart rate in the supine and sitting positions as predictors of mortality in an elderly Chinese population'. Previous studies have shown heart rate (HR) as a risk factor for mortality in Denmark [2], Japan [3], and Germany [4], but none have looked specifically at HR in supine position. The authors reported that supine HR was a strong predictor of both total and cardiovascular mortality while sitting HR was weakly associated when mutually adjusted. This is a quiet revelation, as few to no outpatient practices measure HR while patients are supine. As Asian Americans are at higher risk for cardiovascular mortalities [5] and elderly Asian Americans can have trouble communicating with their English-speaking primary care providers, this finding has great potential to affect screenings in that population. This research builds upon many others in defining the importance of this vital sign, and we hope to encourage further rigorous inquiry by discussing the following points.

First, the authors describe how they measured HRs in the morning between 0630 and 1030 h. However, in the Copenhagen Holter Study, only night-time HR had a significant association with mortality [2]. This finding is also echoed by a study in Japan [3]. Both of those studies utilized an ambulatory monitor [2,3] while Li *et al.* [1] used Omron devices, which require the observer to be physically present with the participant take the measurement. As patient's position needs to be noted, we recommend that future studies recruit patients who sleep supine and take the measurement shortly before bed with an ambulatory monitor.

Second, the authors emphasize that it is an increase in resting HR that predicts for mortality, but a study in Gutenberg [4] found that a HR below 64 bpm was also associated with increased mortality. Patients with coronary artery disease or congestive heart failure benefit from higher than normal resting HRs, and the authors took note of this in their analysis. We applaud them for separating total and cardiovascular mortalities to demonstrate that this effect does indeed have a cardiac association because there is less of a J-curve in the noncardiovascular mortalities. Further study should be done to explore the effect of slower than normal resting HRs, particularly in elderly Asian populations.

Lastly, the authors make an excellent point as to the rise in prevalence of wearable technology. That combined with popularity of smartphones with applications for tracking HR trends has the potential for a new level of personalized medicine. Many elderly Asian-American patients do not speak fluent English, so applications could be set to display in their preferred language so the patients can see their own trends and then the data sent to their primary care provider for interpretation at their next clinic visit. These wearable

devices do not boast great accuracy for now [6], but as innovation in both hardware and software develops, we expect the gap between them and hospital grade monitors to shrink. HR may be one of the simplest vital measurements, but with discoveries like this, it continues to demonstrate its importance as a prognostic tool of health care.

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Conflicts of interest

There are no conflicts of interest.

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Reply

Fei-Ka Li, Chang-Sheng Sheng,
and Ji-Guang Wang

We very much appreciate Wong and Woo for their insightful comments on our resting heart rate (HR) research [1] in their correspondence [2]. HR is not really difficult to measure and has been studied for many years. Nonetheless, there are still many undressed questions for future research.