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CORRESPONDENCE

Differences in the association between high blood pressure and cognitive functioning among the general Japanese population aged 70 to 80 years old: methodological issues to avoid misinterpretation

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Erfan Ayubi[1,2] and Mohadeseh Sani[3]

[1]Department of Epidemiology, School of Public Health, Shahid Beheshti University of Medical Sciences, Tehran, Iran; [2]Department of Epidemiology and Biostatistics, School of Public Health, Tehran University of Medical Sciences, Tehran, Iran and [3]School of Medicine, Zabol University of Medical Sciences, Zabol, Iran
E-mail: mohadeseh.sani@gmail.com

We were interested to read the paper by Ryuno *et al.*[1] that was published in *Hypertension Research* in July 2016. The authors aimed to assess the association between hypertension and the cognitive functioning in participants aged 70–80 years in the Japanese study of Septuagenarians, Octogenarians and Nonagenarians Investigation with Centenarians (SONIC). The result of multiple regression analyses demonstrated that a 1 unit increase in systolic blood pressure (SBP) yielded predicted decreases of −0.10 or −0.05 in the mean for the Japanese version of the Montreal Cognitive Assessment (MoCA-J) in participants who were 70 years old with uncontrolled or controlled blood pressure, respectively. These results in participants who were 80 years old with uncontrolled or controlled blood pressure were −0.05 or 0.04, respectively.

Although interesting data were presented on the association between hypertension and cognitive functioning in elderly people, some methodological and statistical issues should be considered to avoid misinterpretation. In the Ryuno *et al.*[1] study, clinical judgments were overlooked in the interpretation of the regression coefficients because clinically a −0.10 and −0.05 decrease in the mean of MoCA-J is negligible. When interpreting results, clinical importance carries more weight than statistical significance. A larger effect size, lower variation in the variables studied in the study population and, in particular, a larger sample size can easily lead to a significant *P*-value. It is cruc ial to emphasize that the predicted regression coefficients in the Ryuno *et al.*[1] study should be interpreted with caution because unbiased predictions cannot be guaranteed by cross-sectional studies; we also need to internally or externally validate the predictions.[2]

Moreover, reporting only *P*-values for regression coefficients is a common mistake. As is the case in previously published studies about the association of hypertension and cognitive impairment in elderly population,[3] the authors should report confidence intervals for readers so that they can understand the magnitude and direction of the association, and the random variability of the regression coefficients.[4]

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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2 Steyerberg E. *Clinical Prediction Models: A Practical Approach to Development, Validation, and Updating*. Springer Science & Business Media: California, CA, USA, 2008, pp 190–211.

3 Wu L, He Y, Jiang B, Liu M, Wang J, Yang S, Wang Y. The association between the prevalence, treatment and control of hypertension and the risk of mild cognitive impairment in an elderly urban population in China. *Hypertens Res* 2016; **39**: 367–375.

4 Rothman KJ, Greenland S, Lash TL. *Modern Epidemiology*. Lippincott Williams & Wilkins: Philadelphia, PA, USA, 2008, pp. 148–167.