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Misclassification of blood pressure of Vietnamese adults when only a single measurement is used

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Background: Although international guidelines recommend using the average at least two BP measurements in the diagnosis of hypertension, reliance on a single BP measurement may be common in most low- and middle-income countries because of stretched medical resources. This study aimed to examine the potential misclassification error when only one BP measurement is used.

Methods: Participants (n = 14706, 53.5 % females) aged 25–64 years were selected by multi-stage stratified cluster sampling from eight provinces each representing one of the eight geographical regions of Vietnam. Measurements were made using the World Health Organization STEPS protocols. Two BP readings were obtained for all participants after they had rested for at least 15 minutes. The differences between first and second BP reading were identified. Classification based on the first BP reading was compared with classification based on the average of first and second BP readings. Data were analyzed using complex survey methods.

Results: The proportion of participants with a higher first reading was twice the proportion of participants with a higher second reading, and 33.5% had a reduction of at least 5mmHg whilst 13.8% had an increase of at least 5mmHg. Irrespective of direction of change, increased variability in BP was associated with greater age, urban living, greater body size and fatness, reduced physical activity levels, elevated glucose, and raised total cholesterol. A consequence of these changes is that it would be unsafe to diagnose hypertension based on a single reading because almost 20% of subjects would receive a different diagnosis based on the mean of two readings.

Conclusion: There was considerable bi-directional BP variability of the Vietnamese population. The absolute differences were positively associated with greater age and several markers or outcomes of more affluent lifestyle including cardiometabolic abnormalities. These changes would lead to misclassification in diagnosis of hypertension based on a single BP measurement.

Biography

Nga Tran graduated with Bachelor of Public Health from University of Medicine and Pharmacy at Ho Chi Minh City in 2004. She is having more than five years working in the area of controlling and preventing the spread of HIV/AIDS at Department of Counselling and Community Support District 8. After obtaining Master of Public Health in Australia in 2012, she worked for the Department of Disease Control and Prevention, Pasteur Institute Ho Chi Minh as a researcher and an expert in controlling and preventing non-communicable diseases for 20 southern provinces of Vietnam. From 8/2014, she was a lecturer at Department of Health Management and Economics, Pham Ngoc Thach Medical University. From 5/2015, she started doing PhD at Menzies Institute for Medical Research in Australia. Her project focuses on biological risk factors for non-communicable diseases in Vietnam.

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