

**Visit-to-visit SBP variability and cardiovascular disease in a multiethnic primary care setting: 10-year retrospective cohort study**  
ABSTRACT

**Objectives:** The current study aims to determine the relationship of long-term visit-to-visit variability of SBP to cardiovascular disease (CVD) in a multiethnic primary care setting.

**Method:** This is a retrospective study of a cohort of 807 hypertensive patients over a period of 10 years. Three-monthly clinic blood pressure readings were used to derive blood pressure variability (BPV), and CVD events were captured from patient records.

**Results:** Mean age at baseline was  $57.2 \pm 9.8$  years with 63.3% being women. The BPV and mean SBP over 10 years were  $14.7 \pm 3.5$  and  $142 \pm 8$  mmHg, respectively. Prevalence of cardiovascular event was 13%. In multivariate logistic regression analysis, BPV was the predictor of CVD events, whereas the mean SBP was not independently associated with cardiovascular events in this population. Those with lower SBP and lower BPV had fewer cardiovascular events than those with the same low mean SBP but higher BPV (10.5 versus 12.8%). Similarly those with higher mean SBP but lower BPV also had fewer cardiovascular events than those with the same high mean and higher BPV (11.6 versus 16.7%). Other variables like being men, diabetes and Indian compared with Chinese are more likely to be associated with cardiovascular events.

**Conclusion:** BPV is associated with an increase in CVD events even in those who have achieved lower mean SBP. Thus, we should prioritize not only control of SBP levels but also BPV to reduce CVD events further.

**Keyword:** Malaysia; Blood pressure; Blood pressure variability; Cardiovascular disease; Cohort; events; Long term; Multiethnic; Primary care; Visit-to-visit