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Association of BP components with mortality and cardiovascular events in prehypertensive individuals: A Nationwide Population-Based Cohort Study

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Objectives: The effects of each blood pressure index (SBP, DBP, PP, and MAP) on the occurrence of all-cause mortality and cardiovascular (CV) events have not yet been investigated in prehypertensive populations.

Methods: A total of 30,258 prehypertensive Korean participants underwent periodic health examination between 2003 and 2004 were enrolled, and the associations of BP components with all-cause mortality and CV events were investigated. Moreover, based on the DBP [80≤DBP<90 mmHg (N=21,323) and DBP<80 mmHg (N=8,935)], the effects of BP components were also evaluated.

Results: Multivariate Cox analyses in prehypertensive group revealed the hazard ratios (HRs) were 1.120 and 1.131 per 10 mmHg increase in SBP and PP for mortality, and were 1.086 and 1.072 for CV events. However, there were no significant associations between increase in DBP or MAP and adverse clinical outcomes in prehypertensive group, and none of the BP components was significantly associated with mortality and CV events in normal-ranged BP population. In prehypertensive group with DBP less than 80 mmHg, but not between 80 and 90 mmHg, 10 mmHg increases of SBP and PP were also significantly associated with an increase of mortality rates by 43.6% and 40.3%, and with elevation of CV events by 38.2% and 28.7%.

Conclusions: Prehypertensive subjects might need to be cautioned when they have high SBP or PP with low DBP even in healthy populations.