

Dose-response relationship between maternal blood pressure in pregnancy and preterm birth: based on the monitoring data of 212,941 pregnant women in China

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Abstract

Objectives: To analyze the dose-response relationship between maternal Blood pressure (BP) in different trimesters and preterm birth(PTB). **Design:** A monitoring data (cohort) study. **Setting and population:** All single-fetus pregnant women who delivered during 2014-2018 in 13 counties of 6 provinces in China. **Methods:** Through the Maternal and Newborn Health Monitoring System in China, the monitoring data were obtained, including essential maternal information, all previous antenatal examination and pregnancy outcomes of all pregnant women lived in the monitoring area. **Main outcome measures:** PTB(delivered between 28 and 37 weeks); Hypertensive disorders of pregnancy(HDP)(SBP [?]140mmHg and/or DBP [?]90mmHg once); Hypotension (SBP<90mmHg and/or DBP<60mmHg once). **Results:** A total of 212,941 single-fetus pregnant women were included. The overall incidences of HDP and PTB were 7.07% and 4.04% respectively. Taking the group of normal BP as reference, the odds ratios(OR) of PTB for the groups of HDP in 1st, 2nd and 3rd trimesters was 3.23, 2.70 and 2.05 respectively(P<0.001). Hypotension in 3rd trimester was associated with a 1.5-fold higher risk of PTB(P<0.001). ORs of PTB had a nonlinearly U-shaped association with SBP and DBP in 1st, 2nd and 3rd trimesters. **Conclusions:** The risks of PTB varied among pregnant women with the same BP in different trimesters. An increase of BP within the normal range during pregnancy could prevent PTB. Hypotension in 3rd trimester was associated with a high risk of PTB. **Funding:** Funded by the government of China (No.1311300011301). **Key words:** Maternal blood pressure, preterm birth, dose-response relationship, restricted cubic spline, hypertensive disorders of pregnancy, hypotension

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