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# Homocysteine levels and risk of essential hypertension: A meta-analysis of published epidemiological studies

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## ABSTRACT

**Background:** Plasma homocysteine (Hcy) levels may be associated with essential hypertension (EH). However, the results of previous studies on this association are inconsistent.

**Methods:** In this meta-analysis, we performed a systematic literature search of the Embase, PubMed, Cochrane Library, and Web of Science for the relevant articles dated up to March 2016. Pooled odds ratios (ORs) and corresponding 95% confidence intervals (CIs) were used to evaluate the estimates.

**Results:** We included 11 studies with a total of 16,571 participants (4,830 EH cases). We found that elevated Hcy levels were associated with the risk of EH (pooled OR: 1.36, 95% CI: 1.02-1.80 in the random-effects model). However, subsequent subgroup analyses showed that elevated Hcy levels increased the EH risk in retrospective studies (OR: 1.82, 95% CI:

1.53–2.16;  $p < 0.001$ ) and unadjusted studies (OR: 1.72, 95% CI: 1.43–2.07;  $p < 0.001$ ) but not in perspective studies (OR: 0.99, 95% CI: 0.73–1.28;  $p = 0.939$ ) and adjusted studies (OR: 1.21, 95% CI: 0.85–1.72;  $p = 0.297$ ). No significant publication bias was found ( $p = 0.876$  for Begg's test,  $p = 0.144$  for Egger's test). Conclusion: Plasma Hcy levels are associated with EH risk. However, our findings do not support a causal association between Hcy levels and EH.

#### KEYWORDS:

Epidemiological study

essential hypertension

homocysteine

odds ratio

meta-analysis

## Declaration of interest

The authors have declared that no competing interests exist.

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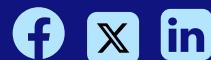
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