

STUDY ON THE RELATIONSHIP BETWEEN THE APPARENT TEMPERATURE AND POPULATION MORTALITY IN BEIJING, CHINA

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Background and Aims: The relationship between air temperature and population mortality were more and more concerned by the researchers in recent years. However, the association of the population mortality with ambient apparent temperature which integrated air temperature and relative humidity was scarcely studied in China. The aim of our study is to explore the potential relationship between the apparent temperature and daily population mortality in Beijing, China.

Methods: Time series study design. The cause-specific mortality data and the data of meteorology and the ambient pollutants in 2004-2008 were collected from local CDC of Beijing and the website of the related local authorities of Beijing, respectively. Generalized additive model (GAM) with poisson regression were used to analyze the association between the daily apparent temperature and the counts of all cause death, cause-specific death of Chronic Ischemic Heart Disease (CIHD), myocardial infarction, intracerebral hemorrhage (ICH) and cerebral infarction (CI) of the exposed population in Beijing respectively, after adjusting relative humidity, air pressure, wind speed, influenza, time trends, week day with cubic spline function, etc.

Results: The cumulative general relative risk (RR) of all cause death was 1.0046 (95% CI= 1.00807 • 1.00133) for 1°C increase of daily mean apparent temperature, the strongest effect was occurred by the lag one day. The RR values for circulatory diseases were 1.00511 • 95% CI 1.00121 • 1.00511 per 1°C increase, stratified analysis of age group showed that the effect of apparent temperature was stronger to the aged above 75. A V-shaped or U-shaped curve was found for the relationship between the apparent temperature and cause-specific death of the exposed population.

Conclusion: The apparent temperature was positively associated with the population mortality, which the subpopulations aged above 75 yrs were the most susceptible to the change of apparent temperature.