

Abstract

Elevated mortality represents one of the main impacts of temperature extremes on human society. Increases in cardiovascular mortality during heat waves have been reported in many European countries; much less is known about which particular cardiovascular disorders are most affected during heat waves, and whether similar patterns are found for morbidity (hospital admissions). Relatively less understood is also cold-related mortality and morbidity in winter, when the relationships between weather and human health are more complex, less direct, and confounded by other factors such as epidemics of influenza/acute respiratory infections.

This thesis comprises a collection of four papers, three of which address the impacts of extreme temperatures on cardiovascular disease (CVD) in the population of the Czech Republic with a focus on ischaemic heart disease (IHD) and cerebrovascular disease (CD). The three papers are complemented by a study analysing trends in cardiovascular mortality and hospitalisations in the Czech Republic. The first paper focuses on comparing the effects of hot and cold spells on mortality from CVD in the population of the Czech Republic during 1986–2006 and examines differences between population groups. The second paper analyses effects of hot and cold spells on IHD mortality in the Czech population between 1994 and 2009 with an emphasis on differences in effects on acute myocardial infarction (AMI) and chronic IHD. The third study compares impacts of hot spells on CVD mortality and morbidity (hospital admissions) in the Czech population between 1994 and 2009 with an emphasis on possible differences between CD and IHD. The last paper examines trends in hospital admissions and in-hospital case-fatality of selected cardiovascular diagnoses, compares them with national CVD mortality during 1994–2009, and estimates the potential contribution of improved in-hospital case-fatality rates to declining mortality from AMI and stroke.