The association between apparent temperature and hospital admissions for cardiovascular disease in limpopo province, South Africa

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Cardiovascular diseases (CVDs) have a high disease burden both globally and in South Africa. They have also been found to be temperature-sensitive globally. The association between temperature and CVD morbidity has previously been demonstrated, but little is known about it in South Africa. It is important to understand how changes in temperature in South Africa will affect CVD morbidity, especially in rural regions, to inform public health interventions and adaptation strategies. This study aimed to determine the short-term effect of apparent temperature (T(app)) on CVD hospital admissions in Mopani District, Limpopo province, South Africa. A total of 3124 CVD hospital admissions records were obtained from two hospitals from 1 June 2009 to 31 December 2016. Daily T(app) was calculated using nearby weather station measurements. The association was modelled using a distributed lag non-linear model with a negative binomial regression over a 21-day lag period. The fraction of morbidity attributable to non-optimal T(app), i.e., cold (6-25 degrees C) and warm (27-32 degrees C) T(app) was reported. We found an increase in the proportion of admissions due to CVDs for warm and cold T(app) cumulatively over 21 days. Increasing CVD admissions due to warm T(app) appeared immediately and lasted for two to four days, whereas the lag-structure for the cold effect was inconsistent. A proportion of 8.5% (95% Confidence Interval (CI): 3.1%, 13.7%) and 1.1% (95% CI: -1.4%, 3.5%) of the total CVD admissions was attributable to cold and warm temperatures, respectively. Warm and cold T(app) may increase CVD admissions, suggesting that the healthcare system and community need to be prepared in the context of global temperature changes.
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