Projected temperature-related disability burdens of bacillary dysentery in temperate and subtropical cities of China

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Objective: Identifying the health burden attributed to climate change will help prioritize actions for preventing or reducing the health impact and assist in planning for future preventive action. The impact of climate change on enteric infection has been a concern in recent years. This study aims to project disability burdens of bacillary dysentery (BD) associated with future climate change in different climatic areas in China and also provide implications and suggestions to other developing countries to tackle climate change.

Methods: Years Lost due to Disabilities (YLDs) were used as the measure of the disability burden of BD, which was calculated based on methods adopted from the Global Burden of Disease studies. A temperate city in northern China and a subtropical city in southern China were selected as the study areas. Quantitative relationship between temperature and the number of BD cases had been estimated in each city. Future temperate scenarios in the study were based on the World Meteorological Organization projections. YLDs for BD in 2000 were examined as the baseline data. Projection of YLDs for BD in 2020 and 2050 under future temperature scenarios were conducted. Demographic changing was also considered in the projective modelling.

Results: Considering future scenarios in both temperature and local population, compared with the YLDs observed in 2000, the YLDs for bacillary dysentery might double by 2020 and triple by 2050 in both the temperate and subtropical cities in China, if other factors remain constant.

Conclusion: The results of this study indicate local consequences of future global warming. The health burden of enteric infection related to increased temperature may greatly increase in the near future in China if there is no effective preventive intervention. It is of great significance for other developing countries like China, having a high population density, inadequate health resources and in-completed emergency response mechanism, to estimate future climate-related health burden in order to facilitate local policy making.