The effects of weather conditions on measles incidence in Guangzhou, Southern China

Abstract:

Background: Few studies were conducted to examine the effects of weather conditions on the incidence of measles. Methods: We used a distributed lag non-linear model (DLNM) to analyze the relationship between meteorological factors and measles incidence in Guangzhou, China. Results: Nonlinear effects of temperature and relative humidity on measles incidence were observed. The relative risk (RR) for the measles incidence associated with the 75th percentile of mean temperature (27.9°C) relative to the median of mean temperature (24.7°C) was 1.00 (0.86,1.16) for lags 0-10 days. The RR for the measles incidence associated with the 25th percentile of relative humidity (64%) relative to the median of relative humidity (73%) was 1.36 (1.01,1.82) for lags 0-30 days. The wet effects and dry effects were larger in females than in males. The wet effects were generally increased with ages. Significantly negative effects of cold spells on measles incidence were observed. Conclusion: Both hot and cold temperatures result in decreases in the incidence of measles, and low relative humidity is a risk factor of measles morbidity. An increased number of measles cases might occur before and after a cold spell. Our findings highlight the need to pay more attention to the weather transformation and improve the immunity of susceptible population for measles elimination. Catch-up vaccination campaigns should be initiated among young adults.

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Resource Description

**Cross-cutting Themes:** Adaptation, Communication, Health Sector Influence, Vulnerable Population, Sociodemographic Vulnerability

**Exposure:**

weather or climate related pathway by which climate change affects health

Meteorological Factor, Solar Radiation, Temperature

Temperature: Cold, Heat

**Geographic Feature:**

resource focuses on specific type of geography

General

**Geographic Location:**
resource focuses on specific location

Non-United States

Non-United States: Asia

Health Impact: specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Airborne Disease

Airborne Disease: Measles

Resource Type: format or standard characteristic of resource

Research Article

Adaptation: Secondary Health Impacts of Adaptation, Vulnerability Assessment

Communication: Health Professional, Policymaker

Vulnerable Population: Children, Low Socioeconomic Status