

## Documents

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**Investigation of the impacts of climate change and rising temperature on food poisoning cases in Malaysia**  
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### Abstract

This study is an attempt to investigate climate-induced increases in morbidity rates of food poisoning cases. Monthly food poisoning cases, average monthly meteorological data, and population data from 2004 to 2014 were obtained from the Malaysian Ministry of Health, Malaysian Meteorological Department, and Department of Statistics Malaysia, respectively. Poisson generalised linear models were developed to assess the association between climatic parameters and the number of reported food poisoning cases. The findings revealed that the food poisoning incidence in Malaysia during the 11 years study period was 561 cases per 100 000 population for the whole country. Among the cases, females and the ethnic Malays most frequently experienced food poisoning with incidence rates of 313 cases per 100,000 and 438 cases per 100,000 population over the period of 11 years, respectively. Most of the cases occurred within the active age of 13 to 35 years old. Temperature gave a significant impact on the incidence of food poisoning cases in Selangor (95% CI: 1.033–1.479;  $p = 0.020$ ), Melaka (95% CI: 1.046–2.080;  $p = 0.027$ ), Kelantan (95% CI: 1.129–1.958;  $p = 0.005$ ), and Sabah (95% CI: 1.127–2.690;  $p = 0.012$ ) while rainfall was a protective factor in Terengganu (95% CI: 0.996–0.999;  $p = 0.034$ ) at lag 0 month. For a 1.0°C increase in temperature, the excess risk of food poisoning in each state can increase up to 74.1%, whereas for every 50 mm increase in rainfall, the risk of getting food poisoning decreased by almost 10%. The study concludes that climate does affect the distribution of food poisoning cases in Selangor, Melaka, Kelantan, Sabah, and Terengganu. Food poisoning cases in other states are not directly associated with temperature but related to monthly trends and seasonality. © 2023 Hassan et al. This is an open access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

### Index Keywords

rain; Article, climate change, female, food poisoning, food spoilage, geographic distribution, human, humidity, incidence, major clinical study, male, morbidity, multivariate analysis, Poisson regression, principal component analysis, risk factor, seasonal variation, sensitivity analysis, statistical model, temperature, adolescent, adult, epidemiology, Malaysia, temperature, young adult; Adolescent, Adult, Climate Change, Female, Foodborne Diseases, Humans, Incidence, Malaysia, Temperature, Young Adult

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