**Epidemiology and Infection**

**Analysis of Foodborne Outbreaks in Wenzhou City, China, 2012-2022**

Gao Sihai#, Chen Qingqing#, Chen Lei, Cai Yuanyuan, Lin Dan, Wang Lili, Chen Minhe, Li Yi, Zhang Leyi, Shao Yongqiang\*

**Supplementary materials**

**Definitions**

Morbidity refers to the frequency of new disease cases occurring in a certain population during a specified time frame. It is typically expressed as the number of new cases per 100,000 individuals per year. Similarly, the attack rate serves as an indicator of the number of new cases in a population. This rate is often used to measure disease incidence within a specific area and over a short duration and is expressed as the number of new cases per exposure. The advantage of this method is that disease risk can be accurately measured based on the level of exposure. The term "exposed" refers to individuals sharing a common history of food consumption, and the number of exposed individuals is usually determined through surveys of those who consumed food in an outbreak setting during the same period.

This study focused on outbreaks caused by a single aetiology, which are classified as microbiological, chemical, mushroom toxins, poisonous animals and plants. Its microbiological aetiology encompasses various organisms, including *Vibrio parahaemolyticus*, *Salmonella, Diarrheagenic E. coli, Staphylococcus aureus, Bacillus cereus, Proteus,* and *Norovirus*.Poisonous plant and animal poisoning refers to poisoning caused by the human consumption of plants and animals that inherently contain toxic components or are formed due to improper storage conditions. Poisonous animal poisoning includes cases caused by pufferfish, paralytic shellfish, venomous snakes, spot stings, bile poison fish, and toads. In contrast, poisonous plant poisoning involves cases caused by cassava, green bean, oleander, aconite, ginkgo, croton, and poppy. Some animals' organs, blood, and secretions are highly toxic, and the toxic components in plants are mainly alkaloids. Rancidity refers to changes in colour, odour, and other characteristics of fat and oil-containing foods during storage caused by the action of microorganisms, enzymes, and oxygen in the air. The incubation period refers to the time from when an aetiology invades or acts on the body to the onset of symptoms, calculated by subtracting the time of symptom onset from the time of exposure to the aetiology. The median incubation period is determined in two steps and scenarios. First, all the incubation periods are arranged in ascending order. If the number of patients is odd, the median is the middle value on the sorted list. If the number of patients is even, the median is calculated as the average of the two middle values.

**Future Directions**

The health department annually develops a comprehensive scheme for preventing and controlling foodborne outbreaks based on the monitoring results from the previous year. This scheme includes various components such as personnel training and health education. It is essential to develop detailed training plans for food industry practitioners covering food safety laws and regulations, food hygiene and safety management, and food processing and storage practices. According to the Food Safety Law, these training courses are mandatory for all food industry practitioners. They utilise lectures and video teaching methods to ensure comprehensive training coverage and regular attendance, enhancing their knowledge and skills. Encouraging the active participation of food industry employees in food safety knowledge competitions and training exchange activities is highly recommended for fostering overall quality improvement and professional growth. Furthermore, strengthening the professional training of food supervision departments and people investigating foodborne outbreaks is crucial, to enhancing food safety personnel's technicalexpertise and supervisory capabilities.

Health education programs should cover food safety knowledge, personal hygiene practices, safe food storage and handling techniques, identification of food poisoning symptoms, and emergency management procedures. Tailor health education activities to meet the specific needs of diverse population groups such as schools, communities, rural and urban residents, and catering workers. To enhance reach and impact, implement comprehensive food safety awareness campaigns through various channels, including the media, the Internet, and social platform.