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Epidemiological trends of foodborne *Campylobacter* outbreaks in the United States of America, 1998–2016

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Highlights

- *Campylobacter* foodborne outbreaks were found to be increasing across the USA.
- Besides dairy products (32%), chicken items (17%) and fresh produce (6%) were commonly associated with *Campylobacter* outbreaks.
- Vegetable and chicken item associated outbreaks were more in summer while milk associated outbreaks were frequent in winter.
- Dine-out (39%) and private residence places (17%) were frequently associated with *Campylobacter* food outbreaks.
- The active disease surveillance should be enhanced by every single state to reduce the burden of *Campylobacter* infections.

Abstract

Campylobacter is a major cause of foodborne diarrheal infections in the United States of America (USA). This study aimed to elucidate the patterns of *Campylobacter* foodborne outbreaks temporally and spatially concerning food vehicles. We collected the data of foodborne outbreaks from 1998 to 2016 reported to the Centers for Disease Control and Prevention. The incidence rate of outbreaks for each food source was calculated and analyzed for each variable including season, food location, and census region. Overall, 465 single-state outbreaks and 8003 cases were reported during 1998–2016. Outbreaks were frequently attributed to dairy products (32%), chicken (17%) and vegetables (6%). Binomial regression analysis showed that compared to chicken items, the highest rate ratio of outbreaks was associated with dairy products (1.86) followed by vegetables (1.35) and meat products (0.76). More outbreaks were reported in the summer (35%) followed by the spring (26%) and fall (22%) season. We found that the highest number of outbreaks occurred in the West 159 (34%) and Midwest 137 (29%) census regions. The study highlights the role of dairy, chicken, and vegetables as food vehicles in *Campylobacter* outbreaks. Findings from this study can help in devising strategies to mitigate the increasing occurrence of *Campylobacter* foodborne outbreaks.

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Keywords

Food sources; *Campylobacter* outbreaks; Foodborne disease; Disease incidence; Risk factors

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