

Public health risk assessment from drinking water from vending machines in Seri Kembangan (Malaysia)

ABSTRACT

This study investigated the public health risk linked with microbial quality of drinking water from vending machines in Seri Kembangan city (Malaysia) using epidemiological and Quantitative Microbial Risk Assessment (QMRA) approaches. This study was also conducted to understand associations between reported health symptoms and daily water intake information. Following WHO guidelines on water safety, QMRA were performed to estimate burden of disease from *E. coli* from water vending machines. Triplicate drinking water samples from water vending machines were collected from six sampling areas around the city, analysed for *E. coli*, information of health symptoms and daily water intake was obtained from 121 respondents by questionnaires. The results indicated the highest numbers of *E. coli* levels were found in Seri Serdang (45–68 CFU/100 mL) and Taman Pinggiran Putra (45–62 CFU/100 mL). *Escherichia coli* levels in drinking water samples from water vending machines obtained from Seri Serdang, Taman Pinggiran Putra, Taman Equine, Balakong and Serdang Jaya exceeded both Malaysian Drinking Water Quality and WHO Drinking Water Quality guidelines. Reported health symptoms were only significantly linked to brand which likely to be associated with regular maintenance of water vending machine. All the drinking water samples from water vending machines except from Lestari Perdana have exceeded the health based target outcomes by QMRA. Combination of epidemiology and quantitative microbial risk assessment have provided a clear understanding of public health risks and gateway for a better management of water vending machines.

Keyword: Public health; Risk assessment; Vending machine; Drinking water