Hour-level Resolution on Consumption Pattern of Substance Abuse

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Hour-level Resolution on Consumption Pattern of Substance Abuse

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Conventional survey-based approaches of determining the consumption statistics of drugs in communities are suffered from non-response biases, and typically underestimate the actual consumption. Time and cost-intensive conventional approaches, therefore, can’t be utilized to determine high-resolution temporal variability in drug consumption. In this study, the temporal trend of consumption of 10 illicit and 26 prescribed neuropsychiatric drugs was determined at hour-level resolution utilizing wastewater-based epidemiology. The hourly composite raw wastewater (every 10 minutes) samples were collected for three consecutive days in a typical week (total of 72 samples), analyzed for target drug residues using UPLC-MS/MS, and back-calculated the consumption rate of drugs in a community. Typical 24 h-composite samples and grab samples were also analyzed and compared to the hourly composite samples. Time-sensitive consumption pattern of drugs can be critical information for authorities to combat drug abuse and addiction.