

Patterns of recreational nitrous oxide use and harms in Australia.

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Introduction and Aims: There has been increasing concern about the growing popularity of recreational nitrous oxide use, and associated harms. It was the purpose of this paper to examine trends in:

(1) Nitrous oxide use, frequency and dose among a sample of people who regularly use ecstasy and other illicit stimulants, from 2003-2020.

(2) The volume of nitrous oxide-related google searches and number of nitrous oxide-related poisonings, from 2009-2020.

Design and Methods: Data were obtained from three sources: the Ecstasy and related Drugs Reporting System (EDRS), an annual survey of people who use ecstasy and other illicit stimulants (2003-2020); the NSW Poisons Information Centre (PIC; 2009-2020); and Google Trends (2009-2020). Joinpoint Regression Program was used to detect and estimate changepoints in trend for percentage reporting use of nitrous oxide in the past six months in the EDRS sample, and Google search probabilities and number of social media posts for nitrous oxide related content. Due to small numbers, descriptive analyses were used for PIC data.

Results: Three changepoints were detected in the selected model for proportion reporting nitrous oxide use in past six months among the EDRS sample: in the period from 2003 to 2020, the average change was 10.0% per year (95% CI: 6.5 to 13.6), although frequency of use remains low (< once a month). Four changepoints were detected in the selected model for Google search probabilities, with an average change of 1.8% per month between Jan 2009 and Dec 2019 (95% CI: 1.5 to 2.2). The number of nitrous oxide-related calls to the NSW PIC has increased from ≤5 calls per year in 2004-2015 to 25 calls in 2018.

Discussions and Conclusions: There appears to have been an increase in nitrous oxide use and associated harms in Australia in recent years. Education campaigns regarding the potential harms of nitrous oxide use are warranted.

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