

The Information Professionals' role in monitoring the international proliferation of novel psychoactive substances

Chad Dubeau, MLIS

Canadian Centre on Substance Abuse

Matthew Young, PhD

Canadian Centre on Substance Abuse

Although the proliferation of novel psychoactive substances (NPS) is regarded as a serious public health issue, monitoring the harms associated with NPS is challenging. This paper describes what the Information Professional's contribution could be to enhancing monitoring efforts. Specifically, this paper will describe the lead author's role in an initiative seeking to test the viability of using Internet media reports captured by the Global Public Health Intelligence Network (GPHIN), the Public Health Agency of Canada's Internet-based early-warning system, to quickly identify clusters of NPS-related harms. This paper also describes the possible role of the Information Professional in the monitoring of media and other open-source information in the future.

Keywords

Novel Psychoactive Substances, Library Science, Monitoring, Early warning systems

Introduction

Information Professionals in the addiction field must strive to stay informed on emerging issues in order to properly serve their clients and provide valuable current awareness services. One such trend is the proliferation of novel psychoactive substances (NPS) and the harms associated with them. This paper

describes the first author's (an Information Professional) contribution to a project aimed at identifying clusters of harms related to NPS by using Internet media reports.

Novel Psychoactive Substances

The European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) defines a NPS as "A new narcotic or psychotropic drug,

in pure form or in preparation, that is not controlled... but which may pose a public health threat..." (Hughes, Gallegos, & Sedetov, 2011). NPS are also referred to as "designer drugs," "herbal highs," "synthetic drugs," "research chemicals," and "legal highs" and are sometimes uncontrolled by applicable drug legislation when they first appear for sale. They are designed to mimic the effects of commonly misused drugs and are often sold as legal alternatives to more traditional illicit drugs. The United Nations Office on Drugs and Crime's 2016 World Drug Report notes the significant volume of new substances being reported (United Nations Office on Drugs and Crime, 2016). As of 2014, the EMCDDA's early warning system was monitoring over 450 new psychoactive substances, 101 of which were newly identified products. The EMCDDA also reported a seven-fold increase in seizures of these substances between 2008 and 2013 (European Monitoring Centre for Drugs and Drug Addiction, 2015).

NPS can be purchased in "head shops" or online and are frequently marketed in attractive packages and given compelling names such as "Gold Max" or "Sparklee". One of the great challenges and dangers associated with these products is that there is no regulation nor any quality assurance and they often do not indicate the identity, quantity, or potency of the chemicals or chemicals included. These unknowns can lead to adverse consequences (Zamengo, Frison, Bettin, & Sciarrone, 2014) as well as pose great challenges in monitoring the emergence and spread of harms related to the substances.

Challenges of monitoring NPS

In the past the illicit drug market was relatively stable – led by a few dominant illicit drugs such as heroin, cocaine, and methamphetamine with new ones such as MDMA, appearing only occasionally. During this time (approximately pre 2000s), conventional strategies for monitoring drug use such as general population surveys, functioned relatively well. However, these methods are not very useful for the rapid

detection of NPS because the time required for these methods means that by the time the information has been collected and analyzed the substance may have already disappeared from the marketplace or already caused significant harm. What is required to monitor NPS is early warning indicators of harms that may signal a problem and permit an opportunity for rapid response. The unique challenges of monitoring NPS have led to the development of innovative solutions (Corazza et al., 2013), including Internet monitoring strategies.

By observing websites that sell NPS, it is possible to detect and monitor emerging substances (Bruno, Poesiat, & Matthews, 2013). User-based message boards are also important sources of information (Davey, Schifano, Corazza, & Deluca, 2012; Deluca et al., 2012; McNaughton, Black, Zulueta, Budman, & Butler, 2012). Internet media reports, although used to monitor the spread of infectious diseases since 2002, are not widely used to track NPS. One initiative that monitors media and open source information, The Global Public Health Intelligence Network (GPHIN), captures some information on NPS.

Global Public Health Intelligence Network

GPHIN is a collaboration between the Public Health Agency of Canada and the World Health Organization. The GPHIN tracks Internet media reports around the world in nine languages and sends alerts on potential disease outbreaks or other health threats to international subscribers (Keller et al., 2009). Between July 1998 and August 2001, 56% of the 578 disease outbreaks investigated by the World Health Organization were first identified by the GPHIN (Heymann, Rodier, & the WHO Operational Support Team to the Global Outbreak Alert and Response Network, 2001).

Using the GPHIN to monitor NPS

In 2014, the authors tested the feasibility of using the GPHIN to monitor the spread of

NPS by examining English media reports on synthetic cannabinoid receptor agonists from 1997 to June 2013 (Young, Dubeau, & Corazza, 2015). To do so, the authors required a search strategy that would detect media reports on synthetic cannabinoids stored in the GPHIN system. The Information Professional on the team created a query using known search terms and working within the limitations of the searching capabilities of the system. Some of these limitations included a restricted query length and the inability to use typically standard searching methods such as truncation.

Below is a copy of the query used:

“synthetic cannabinoids” OR “synthetic cannabis” OR “synthetic marijuana” OR “synthetic weed” OR “synthetic pot” OR “synthetic grass” OR “synthetic THC” OR “fake cannabis” OR “fake marijuana” OR “fake weed” OR “fake pot” OR “legal weed” OR “legal pot” OR “legal blends” OR “cannabimimetics” OR “legal highs” OR “herbal highs” OR “herbal blends” OR “herbal incense” OR “herbal mixtures” OR “herbal smoking blends” OR “synthetic cannabinoid” OR “legal blend” OR “cannabimimetic” OR “legal high” OR “herbal high” OR “herbal blend” OR “herbal mixture” OR “herbal smoking blend.”

The results of the search (i.e., number of media reports about synthetic cannabinoids captured by GPHIN) were plotted over time and compared with other available indicators of synthetic cannabinoid use, namely U.S. poison control data center exposures and volume of discussion about synthetic cannabinoids on the harm reduction forum Bluelight. Results indicated that the number of media reports over time very closely mirrored the number of poison center exposures and volume of discussion, indicating that media and other open source information can help monitor the presence, usage, local policy, law enforcement responses, and spread of NPS in a rapid and effective way. An important consideration raised by this study is how do we search for and detect media stories on drug

related health threats when so little information is known?

Searching for new drugs

The next logical step in detecting clusters of drug-related harms via media reports is to set up a query that could identify clusters of harms related to NPS and other new drugs. The challenge is that there are no specific drug names to search for. That said, most Information Professionals are routinely faced with the challenge of searching for something while being provided with very little information. They are often approached with vague descriptions (e.g.: the red book on harm reduction) or may be asked to track the origin of a paraphrased statement lacking proper citation. Regardless of the problem, the solution in such circumstances is to work with the information at hand.

What do we know?

We know that clusters of harms related to NPS have been identified via media reports in the past, and that these are fairly easy to identify by searching for the drug in question in a search engine for media reports such as Google News.

We also know that journalists use specific language or phrases in these articles when referring to the emergence of a new drug crisis or harms related to unidentified drugs.

What if we collected these phrases and used them in a query?

Our approach

To create our test query we first chose the drug alpha-pyrrolidinopentiophenone a NPS (synthetic cathinone) that was associated with clusters of harms in the US and Canada in 2014 in 2015. We searched for “flakka” or alpha-pyrrolidinopentiophenone in Google News and restricted the search to media articles published between January 1, 2014 to December 31, 2015. We chose these dates because at that time alpha PVP was a new drug of which reporters and drug experts knew very little. After acquiring reports of adverse

drug events related to alpha-PVP, we then scanned the articles for generic phrases used by the reporters when referring to this new drug. From these reports phrases were extracted and assembled into the following query:

“new drug” OR “new synthetic drug” OR “first seizure” OR “first significant seizure” OR “newest drug” OR “drug trend” OR “new stimulant” OR “newest designer drug” OR “new designer drug” OR “drug turning up in” OR “drug that is spreading” OR “drug on the rise” OR “latest drug” OR “latest designer drug” OR “latest synthetic drug” OR “emerging drug” OR “increasingly popular drug” OR “increasingly popular synthetic drug” OR “the new crack” OR “the new cocaine” OR “the new marijuana” OR “the new ecstasy” OR “the new meth” OR “the new crystal meth” OR “the new bath salt” OR “next designer drug” OR “new street drug” OR “latest street drug” OR “newest street drug” OR “new recreational drug” OR “latest recreational drug” OR “newest recreational drug” OR “drug surfaces” OR “drug craze” OR “new, scary street drug” OR “new, scary drug” OR “new, scary designer drug” OR “drug that is sweeping” OR “new legal drug” OR “new legal drugs”

The terms within this query were tested using Google News (limited to past week) and the searches yielded 24 media reports on harms related to psychoactive substances. After further testing, it is expected that using this query will increase the system’s sensitivity to detecting media reports related to NPS, therefore improving GPHIN’s effectiveness as an early warning system for

identifying clusters of harms related to psychoactive substances. We will assess the efficacy of this approach by analyzing the results for relevancy and if we find a consistent influx of media reports on adverse drug events generated by this method, the query will then be refined and regularly updated with new phrases to improve its effectiveness. The same exercise will eventually be repeated in languages other than English to broaden the pool of results.

Conclusion

Monitoring and surveillance activities are an integral part of a proactive approach in the reduction of harms related to problematic substance use and Information Professionals can play an important role in these initiatives. Surveillance requires scanning of vast amounts of information, which means a well-crafted search strategy that is constantly being updated, tested, and improved is essential. The expertise of Information Professionals in this regard can improve results, save time, and ensure comprehensiveness.

Our proposed approach to searching for clusters of harms related to new and emerging drugs consists of identifying generic phrases used in relevant media reports and applying these to ongoing searches generated by the GPHIN system, however, there may be other methods that are also worth exploring. Given the expertise of the audience of this journal, we would be very grateful for any other suggestions or ideas for alternative approaches that may have been overlooked.

References

- Bruno, R., Poesiat, R., & Matthews, A. J. (2013). Monitoring the Internet for emerging psychoactive substances available to Australia. *Drug and alcohol review, 32*(5), 541-544. doi:10.1111/dar.12049
- Corazza, O., Assi, S., Simonato, P., Corkery, J., Bersani, F. S., Demetrovics, Z., . . . Pasinetti, M. (2013). Promoting innovation and excellence to face the rapid diffusion of novel psychoactive substances in the EU: the outcomes of the ReDNet project. *Human Psychopharmacology: Clinical and Experimental, 28*(4), 317-323. doi:10.1002/hup.2299

- Davey, Z., Schifano, F., Corazza, O., & Deluca, P. (2012). e-Psychonauts: conducting research in online drug forum communities. *Journal of Mental Health, 21*(4), 386-394. doi:10.3109/09638237.2012.682265
- Deluca, P., Davey, Z., Corazza, O., Di Furia, L., Farre, M., Flesland, L. H., . . . Pasinetti, M. (2012). Identifying emerging trends in recreational drug use; outcomes from the Psychonaut Web Mapping Project. *Progress in Neuro-Psychopharmacology and Biological Psychiatry, 39*(2), 221-226. doi:10.1016/j.pnpbp.2012.07.011
- European Monitoring Centre for Drugs and Drug Addiction. (2015). *New psychoactive substances in Europe. An update from the EU Early Warning System (March 2015)*. Luxembourg: Publications Office of the European Union Retrieved from <http://www.emcdda.europa.eu/system/files/publications/65/TD0415135ENN.pdf>.
- Heymann, D. L., Rodier, G. R., & the WHO Operational Support Team to the Global Outbreak Alert and Response Network. (2001). Hot spots in a wired world: WHO surveillance of emerging and re-emerging infectious diseases. *The Lancet infectious diseases, 1*(5), 345-353. doi:10.1016/S1473-3099(01)00148-7
- Hughes, B., Gallegos, A., & Sedetov, R. (2011) Responding to new psychoactive substances. *Drugs in focus: Briefing of the European Monitoring Centre for Drugs and Drug Addiction: Vol. 22*. Lisbon, Portugal: European Monitoring Centre for Drugs and Drug Addiction.
- Keller, M., Blench, M., Tolentino, H., Freifeld, C. C., Mandl, K. D., Mawudeku, A., . . . Brownstein, J. S. (2009). Use of unstructured event-based reports for global infectious disease surveillance. *Emerging Infectious Diseases, 15*(5), 689-695. doi:10.3201/eid1505.081114
- McNaughton, E. C., Black, R. A., Zulueta, M. G., Budman, S. H., & Butler, S. F. (2012). Measuring online endorsement of prescription opioids abuse: an integrative methodology. *Pharmacoepidemiology and Drug Safety, 21*(10), 1081-1092. doi:10.1002/pds.3307
- United Nations Office on Drugs and Crime. (2016). *World Drug Report 2016*. New York: Author Retrieved from http://www.unodc.org/doc/wdr2016/WORLD_DRUG_REPORT_2016_web.pdf.
- Young, M., Dubeau, C., & Corazza, O. (2015). Detecting a signal in the noise: monitoring the global spread of novel psychoactive substances using media and other open-source information. *Human psychopharmacology, 30*(4), 319.
- Zamengo, L., Frison, G., Bettin, C., & Sciarrone, R. (2014). Understanding the risks associated with the use of new psychoactive substances (NPS): high variability of active ingredients concentration, mislabelled preparations, multiple psychoactive substances in single products. *Toxicology Letters, 229*(1), 220-228. doi:10.1016/j.toxlet.2014.06.012

Contact the authors

Chad Dubeau, MLIS
Information Specialist
Canadian Centre on Substance Abuse
500-75 Albert Street,
Ottawa Ontario Canada K1P 5E7
613-235-4048
cdubeau@ccsa.ca

Matthew Young, PhD
Senior Research & Policy Analyst
Canadian Centre on Substance Abuse
500-75 Albert Street,
Ottawa Ontario Canada K1P 5E7
613-235-4048
myoung@ccsa.ca