Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.

International Journal of Drug Policy 86 (2020) 102951

Contents lists available at ScienceDirect

International Journal of Drug Policy

journal homepage: www.elsevier.com/locate/drugpo

Short Report

# Fentanyl panic goes viral: The spread of misinformation about overdose risk from casual contact with fentanyl in mainstream and social media

Leo Beletsky[a,f,g,*], Sarah Seymour[a], Sunyou Kang[a,f], Zachary Siegel[a], Michael S. Sinha[b,g], Ryan Marino[c], Aashka Dave[d], Clark Freifeld[e]

[a] Health in Justice Action Lab, School of Law and College of Health Sciences, Northeastern University, Boston, MA, United States
[b] Harvard-MIT Center for Regulatory Science, Harvard Medical School, Cambridge, MA, United States
[c] Division of Medical Toxicology, Department of Emergency Medicine, University Hospitals, Cleveland, OH, United States
[d] Center for Civic Media, Massachusetts Institute of Technology, Cambridge, MA, United States
[e] Khoury College of Computer Sciences, Northeastern University, Boston, MA, United States
[f] Division of Infectious Disease and Global Public Health, UC San Diego School of Medicine, San Diego, California, United States
[g] Center for Health Policy and Law, Northeastern University School of Law, Boston, MA, United States

ARTICLE INFO

*Keywords:*
Fentanyl
Law enforcement
Overdose
Health misinformation

ABSTRACT

*Background:* Fueled by misinformation, fentanyl panic has harmed public health through complicating overdose rescue while rationalizing hyper-punitive criminal laws, wasteful expenditures, and proposals to curtail vital access to pain pharmacotherapy. To assess misinformation about health risk from casual contact with fentanyl, we characterize its diffusion and excess visibility in mainstream and social media.

*Methods:* We used Media Cloud to compile and characterize mainstream and social media content published between January 2015 and September 2019 on overdose risk from casual fentanyl exposure.

*Results:* Relevant content appeared in 551 news articles spanning 48 states. Misinformed media reports received approximately 450,000 Facebook shares, potentially reaching nearly 70,000,000 users from 2015-2019. Amplified by erroneous government statements, misinformation received excess social media visibility by a factor of 15 compared to corrective content, which garnered fewer than 30,000 shares with potential reach of 4,600,000 Facebook users.

*Conclusion:* Health-related misinformation continues to proliferate online, hampering responses to public health crises. More evidence-informed tools are needed to effectively challenge misinformed narratives in mainstream and social media.

## Introduction

Effective public health requires precision, but the domain of drug policy has long been a province of muddled communication. Even as COVID-19 has captured headlines, North America continues to experience worsening levels of drug-related overdose. Responses to this crisis have often lacked accuracy and conflate key terms and concepts. The very moniker "opioid epidemic" obscures the crisis' structural complexity behind a vector-based framing (Dasgupta, Beletsky, & Ciccarone, 2018).

One element of that complexity is the spread of health misinformation as both an outcome—and a partial driver—of the crisis. With deaths involving illicitly-manufactured fentanyl (IMF) surging fivefold 2014-2017 (CDC, 2020), resultant fentanyl panic has spawned misinformation in mainstream and social media. This analysis focuses on the rumored risks of incidental exposure to fentanyl. Supposed consequences of casual tactile and respiratory contact with powder fentanyl have been purported to include shortness of breath, heart palpitations, fainting, and other sequelae; none of these symptoms is consistent with opioid toxicity (ACMT, 2017). Despite scientific consensus debunking such risk (ACMT, 2017), some government communiques (e.g. Drug Enforcement Administration (DEA)) have amplified rumors and continue to feature inaccurate information (DEA, 2016) (See Supplement 1, Fig. 2).

Fentanyl panic has real-world consequences. Professional responders and witnesses may delay overdose intervention to avoid perceived potential health risks to themselves (Nelson & Perrone, 2018). Inaccurate risk perception can contribute to unnecessary stress and other mental health issues. Misinformation can also engender counterproductive policies, including hyper-punitive responses, unnecessary

* Corresponding author.
*E-mail address:* l.beletsky@northeastern.edu (L. Beletsky).

https://doi.org/10.1016/j.drugpo.2020.102951

0955-3959/ © 2020 Published by Elsevier B.V.

expenditures, and pharmaceutical over-regulation (Dasgupta et al., 2018).

Social media is the principal channel for health misinformation (Pennycook & Rand, 2019), so it is imperative to understand its dynamics through diffusion and content analyses (Bode & Vraga, 2015). Research suggests that misinformation receives far higher—and lasting—"excess visibility" than corrective content, but to our knowledge, no such analysis has focused on fentanyl myths (Shin, Jian, Driscoll, & Bar, 2018). We apply novel social listening techniques to quantify misinformation about incidental fentanyl overdose risk, analyzing its diffusion in mainstream and social media (Facebook) to assess its excess visibility (Petersen, Vincent, & Westerling, 2019).

## Methods

Between May-December 2019, we utilized the Media Cloud information ecosystem to identify mainstream media content published between January 2015-September 2019 related to the overdose crisis. Media Cloud (www.mediacloud.org), an open-source free web-scraping media analysis tool, generates content collections by geography or topic that can be further queried based on additional search operators. Within this database, we queried nine search terms specific to casual fentanyl exposure, enhanced by boolean and wildcard operators: fentanyl AND (glove* OR mask* OR touch* OR contact* OR absor* OR inhal* OR breath* OR expos*).

We reviewed the resulting dataset for relevance and duplication, noting state of publication, incident(s) covered, and reference to government guidance. Articles were coded as "misinformation," "corrective," or "partially-corrective." Content that explicitly endorsed the concept of overdose risk from casual fentanyl contact (by touch or inhalation) or transmission or presented anecdotal accounts of such events mentioning its rumored sequelae (e.g. overdose, shortness of breath, heart palpitations, fainting) was considered "misinformation" (ACMT, 2017).

Content that accurately communicated the lack of immediate health risk from casual fentanyl contact or that explicitly debunked misinformed narratives was considered "corrective." Content that presented both misleading and corrective narratives (by either incompletely characterizing risks or providing mixed reviews of anecdotal accounts) was considered "partially-corrective." Coding analysis followed a standardized protocol of reviewing article titles, text, and media captions for relevant information. It was conducted by four trained reviewers consisting of staff and student interns, using redundant coding and triggering staff (SS) review to resolve any discordant assessment. We modeled potential informational reach, using Facebook sharing data provided by Media Cloud (via Crowdtangle) and a multiplier for an average user's contacts (155) (Dunbar, 2016). These figures represent an upper bound on the total number of user-views, assuming that each user and their contacts interacts with the article in question and that each user interacts with no more than one article reporting a certain incident.

## Results

Queries produced 551 relevant news articles (47 national and 504 across state and local sources). Entries spanned January 2015-September 2019. Content included coverage of specific "overdoses," general occupational risks, and policy responses. Content focusing on broader issues typically referenced specific events as evidence of risk. Of 506 (92%) stories containing misinformation, 37 were published by national outlets. Overall, misinformation received 450,011 Facebook shares (See Fig. 1), with an upper bound of 69,751,705 potential user-views (as opposed to unique viewers). Articles spanned 48 states, with the most originating from Texas and Pennsylvania.

The first notable surge in coverage coincided with a 2016 DEA communique, stating that "a small amount [of fentanyl] ingested or absorbed through the skin can kill you" (DEA, 2016) (See Supplement, Fig. 2). The video features two officers from Atlantic County, New Jersey who describe an "overdose" event after inhaling airborne fentanyl. Symptoms described include loss of blood flow to the face, disorientation, and shortness of breath—consistent with panic attacks (ACMT, 2017). This video was heavily referenced in subsequent upticks in coverage, appearing in 80 articles.

The most viral story (133,751 Facebook Shares across 25 states; potential reach: nearly 21,000,000 user-views) involved an East Liverpool, Ohio officer who claimed to have "[felt] his body shutting down" from brushing white powder off of his uniform after a 2017 traffic stop (See Supplement, Fig. 3). He received four doses of naloxone before being "revived." Neither the composition of the powder nor his overdose was confirmed in laboratory testing (Moshtaghian, 2017). The next most-shared incident (45,533 Facebook Shares; potential reach: approximately 7,000,000 user-views) occurred in Columbus, Ohio when an officer inhaled what he thought was fentanyl, but later confirmed as methamphetamine (Body cam footage shows Columbus police officer receiving Narcan during drug arrest, 2018). Some articles updated their coverage accordingly but failed to meaningfully correct the record.

Overall, 45 articles (eight in national outlets) were corrective or partially corrective—8% of the total dataset. This content received only 48,235 Facebook shares: roughly one-tenth of exposure afforded to misinformation. We identified only 18 truly "corrective" articles unequivocally refuting the alleged risk of incidental exposure. This coverage received 29,652 Facebook shares (6.6% of total), with potential reach of 4,596,060 user-views.

## Discussion

As is evident from the emerging proliferation of misinformation about COVID-19, crisis situations breed panic and rumors. In the context of the overdose crisis, misinformation about overdose risk from casual fentanyl contact has quickly permeated mainstream and social media, receiving massive excess visibility over corrective content nationwide, particularly on the social media platform Facebook, the leading source of COVID-19 misinformation in this 'infodemic' (Goodier, 2020). This analysis provides new formative data for future research and intervention design to address and prevent the spread of health misinformation in mainstream and social media.

In line with decades of sensationalistic drug policy coverage (Dasgupta et al., 2018), most mainstream media content on casual exposure-linked overdose fails to include voices of scientific experts, public health officials, and people with lived experience. The DEA and other government agencies have been slow to counter and remedy misleading statements, raising questions about objectivity and conflicts of interest. Mainstream media outlets and social media curators must undertake more systematic efforts to maintain accuracy and prevent panic on issues of public health concern.

This is an urgent ethical and public health imperative, as failure to effectively address the spread of misinformation can cost lives and resources. First responders and other witnesses may refuse or delay providing lifesaving help during overdoses. Professional responders report elevated levels of stress, vicarious trauma, and compassion fatigue; unfounded safety concerns can aggravate these occupational mental health challenges. As opportunistic commercial interests (Harper, 2018) exploit the atmosphere of fear and misinformation, public funds continue to be wasted to address non-existent "biohazard" threats.

Panic also spurs counterproductive policies, including proposals to restrict medical fentanyl access; concerns about supposed occupational risks of fentanyl exposure to police have been especially persuasive in invigorating hyper-punitive laws, including drug-induced homicide (Dasgupta et al., 2018) and capital punishment for distributing this supposed "weapon of mass destruction" (Shortell, 2019). Given the

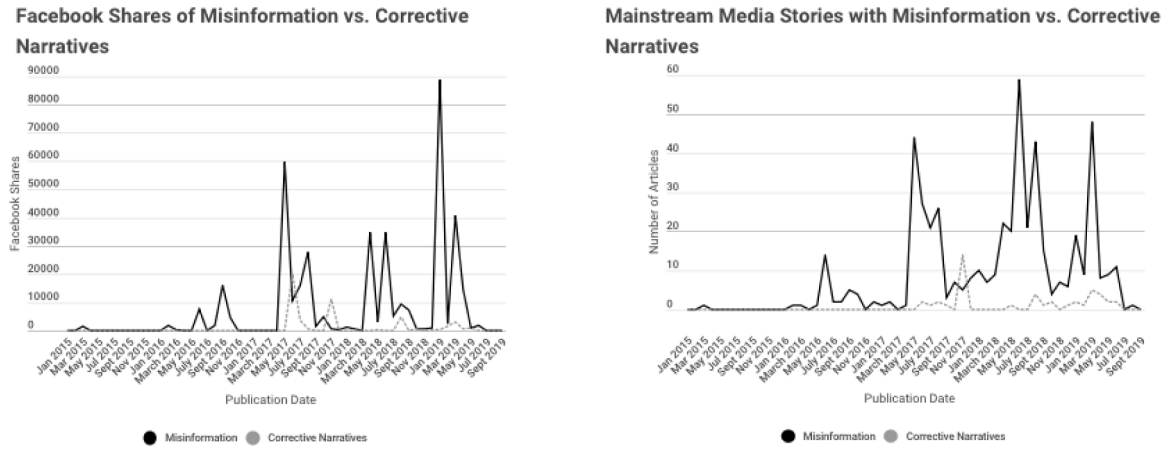


**Fig. 1.** Excess visibility of misinformation about overdose risk from casual fentanyl contact in mainstream and social media (2015-2019).

fraught history of U.S. federal government messaging and policymaking in the wake of 9/11, the invocation of this trope is especially telling.

This analysis has limitations. The dataset's starting point (2015) was determined by Media Cloud's capabilities. However, it coincides with when fentanyl began to appear in postmortem toxicology and media reports. While Media Cloud aims to cover all online media outlets, it is sometimes limited by paywalls and variation in archival practices. This analysis does not situate fentanyl misinformation among content on other substances or police assessment of occupational risks from drugs. Such a comprehensive analysis would be highly valuable but is beyond the scope of this analysis. Nonetheless, the potential exposure of 70 million Facebook users to misinformation and the sheer size of excess visibility of erroneous content vis-à-vis corrective information justifies further research and intervention strategies.

## Conclusions and policy implications

Misinformation about risks of casual fentanyl exposure goes largely uncorrected in mainstream and social media. This can deflect from real solutions, while resource expenditures on fictitious risks should be re-directed toward treatment and harm reduction. Better tools are needed to change misinformed health narratives.

## Ethics

Research was supported by a grant from the Vital Projects Fund. The funder had no role in the design, implementation, or interpretation of the study. No human subjects were used in the study.

## Declarations of Interests

The authors have no conflicts of interests to declare.

## Acknowledgements

Research was supported by a grant from the Vital Projects Fund. The funder had no role in the design, implementation, or interpretation of the study.

## Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.drugpo.2020.102951.

## References

ACMT. (2017). ACMT and AACT position statement: Preventing occupational fentanyl and fentanyl analog exposure to emergency responders. Retrieved from https://www.acmt.net/_Library/Positions/Fentanyl_PPE_Emergency_Responders_.pdf.

Bode, L., & Vraga, E. K. (2015). In related news, that was wrong: The correction of misinformation through related stories functionality in social media. *Journal of Communication, 65*(4), 619–638. https://doi.org/10.1111/jcom.12166.

Body cam footage shows Columbus police officer receiving Narcan during drug arrest. (2018, April 12, 2018). 10TV WBNS. Retrieved from https://www.10tv.com/article/body-cam-footage-shows-columbus-police-officer-receiving-narcan-during-drug-arrest.

CDC. (2020). Illicitly-made fentanyl use is on the rise. Retrieved from https://www.cdc.gov/drugoverdose/opioids/fentanyl.html.

Dasgupta, N., Beletsky, L., & Ciccarone, D. (2018). Opioid crisis: No easy fix to its social and economic determinants. *American Journal of Public Health, 108*(2), 182–186. https://doi.org/10.2105/AJPH.2017.304187.

DEA. (2016). DEA warning to police and public: Fentanyl exposure kills [press release]. Retrieved from https://www.dea.gov/press-releases/2016/06/10/dea-warning-police-and-public-fentanyl-exposure-kills.

Dunbar, R. I. M. (2016). Do online social media cut through the constraints that limit the size of offline social networks? *Royal Society Open Science, 3*(1), Article 150292. https://doi.org/10.1098/rsos.150292.

Goodier, M. (2020). Infodemic investigation: Facebook is biggest source of false claims about coronavirus. Retrieved from https://www.pressgazette.co.uk/infodemic-investigation-facebook-is-biggest-source-of-false-claims-about-coronavirus/.

Harper, J. (2018). Virginia Beach Police fell ill while answering an overdose call. Was it from fentanyl exposure? Retrieved from https://www.pilotonline.com/news/crime/article_a9ec01ce-1284-5998-b26f-5684e11d27c5.html.

Moshtaghian, A. (2017). Police officer overdoses after brushing fentanyl powder off his uniform.

Nelson, L., & Perrone, J. (2018). 'Passive' fentanyl exposure: More myth than reality. Retrieved from https://www.statnews.com/2018/12/21/passive-fentanyl-exposure-myth-reality/.

Pennycook, G., & Rand, D. G. (2019). Fighting misinformation on social media using crowdsourced judgments of news source quality. *Proceedings of National Academy of Sciences of the United States of America, 116*(7), 2521–2526. https://doi.org/10.1073/pnas.1806781116.

Petersen, A. M., Vincent, E. M., & Westerling, A. L. (2019). Discrepancy in scientific authority and media visibility of climate change scientists and contrarians. *Nature Communications, 10*(1), 3502. https://doi.org/10.1038/s41467-019-09959-4.

Shin, J., Jian, L., Driscoll, K., & Bar, F. (2018). The diffusion of misinformation on social media. *Computers in Human Behavior, 83*(C), 278–287. https://doi.org/10.1016/j.chb.2018.02.008.

Shortell, D. (2019, April 21, 2019). Pentagon, DHS considering designating fentanyl a WMD, memo says. CNN. Retrieved from https://www.cnn.com/2019/04/21/politics/dhs-fentanyl-wmd/index.html.