

## Short Report

## Popular media misinformation on neonatal abstinence syndrome, 2015–2021

Katie McCreedy<sup>\*</sup>, Aanchalika Chauhan, Gabriel Holder, Sunyou Kang, Eric Reinhart, Leo Beletsky

*Bouve College of Health Sciences, Northeastern University, Boston, MA, United States*

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## ABSTRACT

**Background:** As the overdose crisis unfolded, narratives mischaracterizing neonatal abstinence syndrome (NAS) as “addicted babies” with echoes to the “crack babies” panic proliferated in mainstream media. This study examines NAS misinformation dynamics and characteristics over a seven-year period.

**Methods:** Based on a comprehensive query, Media Cloud was used to compile mainstream media content relating to NAS between 2015 and 2021. Articles were redundantly coded on key parameters such as speakers represented, publication source, and scientific accuracy.

**Results:** Of the 348 articles meeting search criteria, 264 (76 %) featured misinformed narratives, 70 (20 %) featured informed narratives, and 14 (4 %) featured both informed and misinformed content. Most frequent misinformation elements related to misrepresentation of babies as “addicted” at birth and exaggeration of NAS symptomatology and long-term harms. Least represented voices were people most affected, with just 11 (2 %) featuring mothers who used opioids prepartum.

**Discussion:** Since misinformation contributes to punitive legal responses and harms patient care, efforts to prevent, monitor, and address inaccurate and stigmatizing narratives are essential to improving policy and practice.

## Introduction

Health misinformation has garnered recent attention because of its role as a driver of misguided policies and practices during the COVID-19 pandemic. But in the realm of substance use and addiction, misinformation and disinformation has long shaped iatrogenic responses. Harmful policies and practices have been especially acute among mothers and infants. With sinister echoes to the “crack baby” myth of the 1980s, the current opioid crisis has wrought new harms to those affected by Neonatal Abstinence Syndrome (NAS).

In recent decades, the prevalence of NAS has risen in tandem with increasing medical and non-medical use of opioids, including the number of people on opioid agonist therapy to address opioid use disorder (Hirai et al., 2021). The clinical presentation of NAS is associated with infant exposure to opioids or other controlled substances in utero, followed by postpartum withdrawal symptoms. Since its introduction into the medical lexicon in 1975, the scientific understanding of and treatment for NAS advanced to include nonpharmacological interventions and to emphasize the reduction of the stigmatization of

mothers (Finnegan et al., 1975; Wachman et al., 2018; Ciciolla et al., 2021). Infants can not be born “addicted” to drugs despite this phrase often appearing in the media. This was clarified in the 2011 update to the DSM-V which distinguished between addiction and dependence (O’Brien, 2011). Despite the established importance for maternal health of reducing stigma for mothers, pervasive myths disseminated by mainstream media outlets exaggerate the health effects of NAS and ignore the experience of mothers. Opioid-exposed infants without appropriate diagnosis and treatment may be at increased risk of mortality (Leyenaar et al., 2021). Opioid-exposed infants who are appropriately diagnosed with NAS and treated do not have significantly different mortality risk from the reference population (Leyenaar et al., 2021). For instance, it is scientifically inaccurate to refer to NAS as an epidemic, which implies transmissibility and may exacerbate stigma, because it is not an infectious disease (Centers for Disease Control, 2022).

Articles which share this misinformation may drive federal, state, and institutional policies and health care practices that prevent people who use drugs (PWUD) during pregnancy from seeking care for fear of

<sup>\*</sup> Corresponding author.

E-mail address: [mccreedy.k@northeastern.edu](mailto:mccreedy.k@northeastern.edu) (K. McCreedy).

criminalization or child-separation, which in turn compromises health. These consequences are not distributed equally, but rather fall disproportionately on those already subjected to increased marginalization and racialization. Black women are subjected to higher rates of drug screening during pregnancy and are more likely to be incarcerated or separated from their children for prenatal drug use (Kunins et al., 2007). Punitive responses to drug exposure extend to situations when expectant mothers are taking prescribed medications for pain or substance use pharmacotherapy (Wakeman et al., 2020).

Misinformation on NAS may encourage inaccurate and harmfully moralistic portrayals of the syndrome and punitive responses like state laws and prosecutions. Building on prior work to better understand misinformation dynamics in substance use and addiction (Beletsky et al., 2020), this study aims to examine the prevalence and pervasiveness of NAS misinformation over the 7-year period between January 2015 to December 2021.

## Methods

Media Cloud, an MIT Media Lab software aggregates popular news media, was used to compile mainstream media content published in national, state, and local sources over a 7-year period between January 2015 to December 2021. Media Cloud was queried using the following two boolean queries: (addict\* or withdraw\* or hook\* or depend\* or heroin or drug\* or substance\* or opioid\* or stimulant\* or benzo\*) and (baby or babies or infant\* or newborn\* or child\* or born or deliver\*) + (“Neonatal Abstinence Syndrome”) or (“NAS”).

Search results were filtered for duplicate and irrelevant articles and reviewed for publication date and source type (national, state, and local). Articles that included any of the following were coded as misinformation: (1) exaggerations of the harms of NAS beyond what is supported in peer-reviewed literature, (2) that infants could be born “addicted”, (3) criminalistic portrayals of mothers (e.g. criminal punishment being paramount to addressing NAS). The first peer-reviewed literature assessing this relationship found only an increased risk for childhood hospital readmission and concluded there was no association between NAS and infant mortality (Witt et al., 2017). Articles published in the 2015–2017 time period prior to Witt et al., were published during a period of evolving scientific consensus on the relationship between NAS and infant mortality and should be interpreted in this light. However, articles from this period which met the first inclusion criterion, were still included because they exaggerate the potential effects of NAS prior to their being scientific literature to cite on this relationship. Articles that accurately reported on NAS were coded as “informed.” Articles that included criteria of “misinformed” and “informed” were coded as “partially corrective.” We identified prominent speakers within these narratives (journalists, healthcare workers, policymakers, mothers [who used drugs during pregnancy], community members, or other).

To understand myth typology, we analyzed each article for the specific myths presented. Further, we coded for healthcare personnel interviewed in these news articles and whether they shared NAS misinformation. Data collection, cleaning, and coding were conducted by four trained reviewers (KM, SK, AC, GH). Redundant coding between all reviewers was used to identify and address discrepancies, based on methodology used previously (Beletsky et al., 2020). Limitations of note (1) September 2019–February 2020 were not analyzed due to technical limitations and (2) major trends were analyzed across the entire time period, minor variables (healthcare personnel misconception analysis and myth typology) were only analyzed for 2019–2021 articles due to technical limitations.

## Results

Queries produced 348 relevant articles across mainstream media sources over the 7-year period. 182 (52 %) local news outlets most commonly published articles about NAS, followed by 93 (27 %) national

outlets, and 73 (21 %) state outlets. Of the 348 articles analyzed, 264 (76 %) featured misinformed narratives, 70 (20 %) featured informed narratives, and 14 (4 %) featured both informed and misinformed content. Only 7 informed articles were published in the first two years of our analysis; however, 2020–2021 saw 51 informed articles published. Temporally, we find that NAS-related misinformation peaked November 2017, then reduced substantially until experiencing a small resurgence in February 2020–June 2021 (Fig. 1). Until 2020, peaks of misinformed stories significantly overwhelmed corrective stories, after 2020 peaks of corrective news stories appeared in greater tandem with misinformed stories.

## Voice representations

We analyzed voices represented (i.e. person interviewed) across all news articles about NAS. Multiple voices could be featured in a single article. Journalists were most represented at 307 out of 493 features (62 %), legal and law enforcement personnel at 58 (12 %) features, and healthcare personnel at 54 (11 %) features. The least represented voices were mothers who used drugs during pregnancy with 11 (2 %) features and community members in 34 (7 %).

## 2019–2021 Analysis

Due to improvements in data analysis capabilities, we conducted a sub-analysis of 2019–2021 articles that specifically analyzed healthcare personnel perceptions of NAS using their interview statements in the article sample and categorized the myths presented in each article ( $n = 108$ ). In the articles, 55 % ( $n = 33$ ) stated that babies could be born “addicted,” 37 % ( $n = 22$ ) exaggerated the long-term effects of NAS, 7 % ( $n = 4$ ) claimed that NAS is deadly, and 2 % ( $n = 1$ ) referred to NAS as an epidemic. We found that healthcare personnel were most likely to share informed narratives of all speakers included. Of note, 11 (29 %) healthcare personnel interviewed provided misinformation about NAS: 6 (55 %) claimed that babies can be “born-addicted”, 6 (55 %) exaggerated the long-term effects of NAS, 3 (27 %) claimed that NAS is deadly, and 1 (9 %) claimed NAS is an epidemic.

## Conclusion/discussion

This area of drug policy is especially susceptible to misleading narratives as state actors such as drug law enforcement are sometimes the initial source of disinformation. As with the “crack baby” myth, the panic over NAS is both fueled by, and itself helps fuel harmful criminalization of PWUD. Media-fueled stigmatization of drug use during pregnancy encourages punitive policymaking, despite ample evidence demonstrating worse neonatal health outcomes in states with carceral approaches to drug use (Faherty et al., 2019). This research echoes other findings, identifying substance use and other areas of health and public health as targets of pervasive misinformation (Beletsky et al., 2020).

Our study highlighted clear areas for improvement in media messaging. (1) Mothers were least represented in the media which contributes to overall stigma. (2) Healthcare personnel should be included in NAS media messaging, but it is imperative that their contributions be fact-checked. (3) Media must be especially careful to avoid perpetuating the myth that babies can be born addicted to drugs and avoid mischaracterizing the long-term effects of NAS. Efforts to educate both healthcare and media professionals about the science behind NAS are essential to improving public understanding and policy responses to NAS and other emerging health issues.

## Public health implications

This study expands on the understanding of NAS-related stigma to pinpoint areas for improved messaging which may ultimately reduce the impact of discrimination on NAS-related health outcomes.

## Online Media Articles Using Misinformed versus Corrective Language (Jan. 2015 - Dec. 2021)

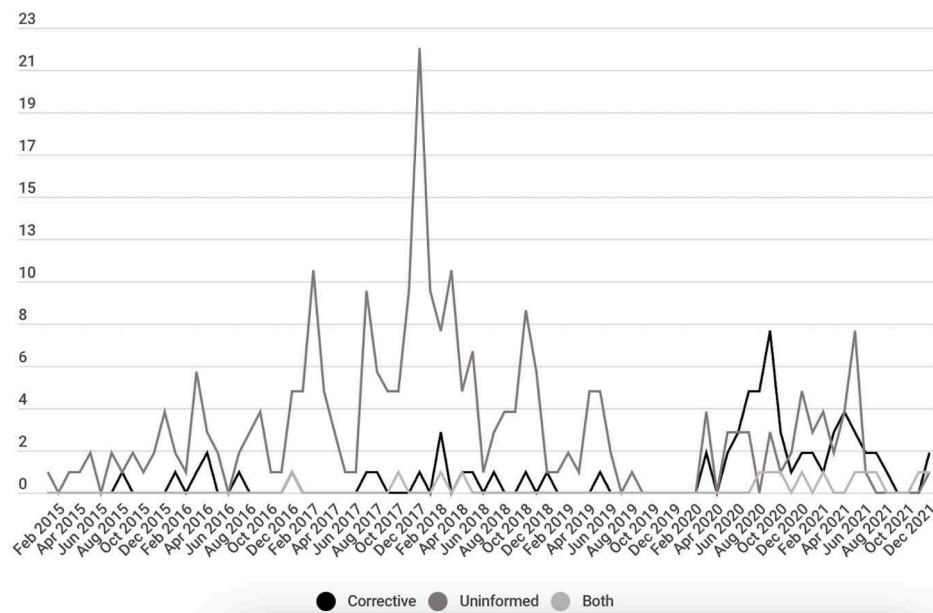


Fig. 1. Temporal trends of NAS media information between 2015 and 2021 ( $N = 348$  articles).

### Ethics

This research was not supported by a funder.

### CRedit authorship contribution statement

**Katie McCreedy:** Writing – review & editing, Writing – original draft, Supervision, Resources, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Aanchalika Chauhan:** Writing – original draft, Validation, Formal analysis, Data curation. **Gabriel Holder:** Supervision, Project administration, Formal analysis, Data curation. **Sunyou Kang:** Writing – review & editing, Writing – original draft, Supervision, Project administration, Methodology, Funding acquisition, Conceptualization. **Eric Reinhart:** Writing – review & editing, Conceptualization. **Leo Beletsky:** Writing – review & editing, Writing – original draft, Supervision, Methodology, Funding acquisition, Conceptualization.

### Declaration of competing interest

The authors declare no conflicts of interests.

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