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Worldwide search behavior following the HHS announcement on the association between prenatal acetaminophen exposure and autism spectrum disorders

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Abstract

Background

Acetaminophen is the most commonly used analgesic during pregnancy, though its association with neurodevelopmental disorders remains debated. Recently, the Department of Health and Human Services (HHS) issued guidance indicating that prenatal acetaminophen use may carry a risk for autism spectrum disorder in offspring. Google Trends is widely used to quantify public engagement with health policy communications. However, no study has examined global information-seeking behavior following the HHS revised guidance on prenatal acetaminophen use and autism risk. Therefore, the present analysis aimed to assess changes in worldwide Google search volume for acetaminophen products and autism-related terminology after this announcement.

Methodology: A repeated cross-sectional analysis of Google Trends data from February 2025 to January 2026 was conducted to examine Search Volume Index patterns for "Paracetamol/Acetaminophen," "Tylenol," "Autism," and "Autistic Spectrum Disorders" worldwide. Mean weekly search volumes were compared between the period preceding and following the September 2025 HHS announcement. Statistical analyses were performed using Student's t test, with significance defined as $p < 0.05$.

Results

A pronounced synchronous spike in search volume occurred during the final weeks of September 2025, coinciding precisely with the HHS announcement. Mean weekly searches for "Paracetamol" increased from 26.1 to 42.3 ($p < 0.01$), for "Tylenol" from 5.7 to 21.1 ($p < 0.01$), and for "Autistic Spectrum Disorders" from 21.8 to 36.3 ($p < 0.05$). No significant increase was observed for the term "Autism" ($p = 0.12$).

Conclusion

The HHS announcement on prenatal acetaminophen use and autism risk triggered an immediate, significant surge in global searches for both the medication and the formal diagnostic terminology, revealing that official health communications can rapidly shape public information-seeking behavior. These findings highlight the profound global reach of high-level policy messaging and its potential to influence awareness, underscoring the need for further research into its downstream effects on clinical practice and maternal-child health outcomes.

Introduction

Acetaminophen constitutes the most widely used pharmacologic agent for analgesia and antipyresis in the pregnant population (1, 2). It remains the only analgesic historically regarded as safe for use during gestation (3). Despite its widespread acceptance, the literature remains divided, with some studies suggesting an association between prenatal acetaminophen exposure and neurodevelopmental disorders, while others find no such relationship. Given the high prevalence of use during gestation, findings pertaining to intrauterine acetaminophen exposure and multiple child health outcomes warrant

careful consideration. The existing body of evidence does not conclusively establish a causal link between maternal acetaminophen use during pregnancy and autism or attention-deficit/hyperactivity disorder in offspring (4–7). However, some evidence is consistent with an association between prenatal acetaminophen exposure and an increased incidence of neurodevelopmental disorders consideration (2, 8–11). Recently, the Department of Health and Human Services (HHS), under the leadership of RFK Jr., in conjunction with other state entities, has determined that acetaminophen use during pregnancy carries a potential risk for the development of autism and neurocognitive disorders in offspring (12, 13).

To quantify public engagement following health policy communications, Google Trends has been extensively employed in infodemiological research. This analytical tool provides temporally resolved data on internet search volume for specific terms, offering a valuable resource for healthcare research (14). Previous investigations have employed this methodology to characterize population-level interest in drug-related problems, including one study that specifically examined public interest in medication-related concerns as reflected in information search trends (15). Another investigation utilized Google Trends to assess the impact of four global public health days, namely World Cancer Day, World Diabetes Day, World Mental Health Day, and World AIDS Day, on online health information-seeking behavior in Central and South America (16). Additional research has examined changes in internet search behavior following direct-to-consumer advertising campaigns for pharmaceutical agents, including faricimab-svoa (17). Furthermore, Google Trends has been applied to evaluate the effect of tobacco control policies on information seeking for smoking cessation, as demonstrated in a study conducted in the Netherlands (18).

Despite the widespread use of Google Trends to examine public responses to health communications, no study to date has quantified the global information-seeking behavior following an official government announcement on the association between prenatal acetaminophen exposure and autism spectrum disorder risk. The objective of this study was to quantify, using Google Trends, the impact of the Department of Health and Human Services' revised guidance on prenatal acetaminophen use and autism spectrum disorder risk on global information-seeking behavior (12, 13).

Methodology

Search terms pertaining to the HHS announcement were identified using the Google Trends online platform (https://trends.google.com/trends/). To consolidate multilingual search volumes into a unified conceptual dataset, topic-based queries were employed for term retrieval and analysis. Data were collected over a one-year period, encompassing worldwide search queries, to assess the global impact of policy announcements originating in the United States.

A repeated cross-sectional analysis was conducted utilizing Google Trends data from February 2025 to January 2026 to examine Search Volume Index (SVI) patterns for the terms "Paracetamol/Acetaminophen", "Tylenol", "Autism", and "Autistic Spectrum Disorders", including an evaluation of associated related queries. The SVI is a normalized measure ranging from 0 to 100,

representing relative search frequency proportional to total searches within a given time interval, rather than absolute search volume (19, 20).

Statistical analysis

Mean weekly relative search volume values, absolute changes, and corresponding statistical analyses were calculated using Google Sheets as a data management and analysis platform. Descriptive statistics were generated for specified time periods of interest pertaining to the public announcement issued by the Department of Health and Human Services. Comparative analyses were conducted using the Student's t test, with statistical significance defined as $p<.05$. All mean values are presented with their corresponding standard deviations.

Results

The HHS statement references acetaminophen five times and Tylenol once, discussing a potential association with adverse neurodevelopmental outcomes in the context of rising autism spectrum disorder (ASD) prevalence (12).

Analysis of Google Trends Search Volume Index data from February 2025 to January 2026 revealed distinct temporal patterns in public search behavior surrounding acetaminophen products and autism spectrum disorder, as illustrated in Fig. 1. Baseline SVI values for “Paracetamol/Acetaminophen” demonstrated relative stability (range: 37–54) throughout most of the study period, with comparable patterns observed for “Tylenol” (range: 7–13) and “Autism” (range: 14–23). A pronounced synchronous spike occurred during the week of September 21, 2025, wherein all search terms exhibited dramatic, simultaneous elevation. “Paracetamol/Acetaminophen” surged to its maximum value (SVI = 100), coinciding with peaks in “Tylenol” (SVI = 66), “Autism” (SVI = 40), and “Autistic Spectrum Disorders” (SVI = 93). This event represents the sole SVI = 100 observation in the dataset and constitutes a clear outlier relative to baseline variability. No other periods demonstrated comparable magnitude or synchronization across search terms. Temporal analysis revealed no consistent seasonal cyclicity, though modest increases in “Paracetamol” searches occurred during winter months (December 2025-January 2026; mean SVI = 50.7). The pronounced September 2025 spike coincides temporally with the HHS policy announcement regarding acetaminophen use during pregnancy, suggesting a direct infodemiological response to this public health communication event.

Analysis of worldwide Google search data revealed statistically significant increases in mean search volume for three of the four topics following the announcement, as presented in Table 1. Searches for the drug names "Paracetamol" and "Tylenol" exhibited a marked increase globally, with mean values rising from 26.13 (SD = 2.10) to 42.27 (SD = 21.75) and from 5.73 (SD = 1.75) to 21.07 (SD = 21.27), respectively. These increases were statistically significant ($p < 0.01$ and $p < 0.01$). Furthermore, worldwide searches for the formal diagnostic term "Autistic Spectrum Disorders" also showed a significant rise, from a mean of 21.8 (SD = 2.18) in the first fortnight to 36.33 (SD = 24.87) in the second

($p < 0.05$). The substantial increase in standard deviations observed in the second fortnight for all significant topics suggests a sharp, temporary spike in global search interest immediately following the news, rather than a sustained, uniform increase across the entire two-week period. In contrast, the increase in worldwide searches for the more colloquial term "Autism" did not reach statistical significance ($p = 0.12$), despite its mean rising from 10.6 (SD = 1.68) to 15.27 (SD = 10.85).

Table 1
Comparison of mean Search Volume Index values, standard deviations, and t-test results for medication and autism-related terms before and after the HHS announcement

Search term	1st September fortnight (Pre-HHS announcement)		2nd September fortnight (Post-HHS announcement)		
	Mean SVI	± SD	Mean SVI	± SD	P value[a]
Paracetamol	26.13	2.10	42.27	21.75	< 0.01
Tylenol	5.73	1.75	21.07	21.27	< 0.01
Autism	10.60	1.68	15.27	10.85	0.12
Autistic Spectrum Disorders	21.80	2.18	36.33	24.87	< 0.05

[a] P values were calculated relative to the baseline SVI (1st September fortnight: pre-HHS announcement).

Discussion

The present study sought to investigate whether a public health announcement from the U.S. Department of Health and Human Services regarding acetaminophen use during pregnancy was significantly associated with measurable changes in global information-seeking behavior. The timely and pressing nature of this question stems from rising autism spectrum disorder prevalence and ongoing scientific discourse surrounding potential environmental contributors to neurodevelopmental outcomes. By leveraging Google Trends data as a real-time proxy for public attention, this infodemiological approach offers a novel and non-invasive method to assess the penetration and salience of high-level policy communications. These findings contribute to understanding how global populations engage with and respond to official health messaging, providing insights that may inform future public health communication strategies.

The observed synchronous spike in searches for acetaminophen products and autism-related terminology coinciding precisely with the HHS announcement represents a clear infodemiological signal. The announcement successfully captured international public attention regarding the specific medication in question. The differential response between search terms is particularly noteworthy. The statistically significant increases observed for "Paracetamol," "Tylenol," and "Autistic Spectrum Disorders" suggest that individuals exposed to the announcement employed both the generic and brand medication

names, precisely as articulated in the communication, as well as the formal diagnostic terminology when seeking further information. This pattern may reflect the specific language employed in the HHS statement, which referenced acetaminophen five times and Tylenol once while discussing neurodevelopmental outcomes. This finding aligns with a previous study examining the effect of tobacco control policy announcements on online information-seeking for smoking cessation, which demonstrated short- to medium-term increases in search rates with potential downstream implications for cessation outcomes (18). In a similar way, the result also aligns with a study examining digital health information-seeking behavior following the World Health Organization's declaration of COVID-19 as a pandemic, which demonstrated an immediate increase in search volumes across all countries under investigation (21). Also, this result is consistent with a study examining online information-seeking behavior following the World Health Organization's declaration of Zika as a Public Health Emergency of International Concern, which demonstrated a peak in global search interest coinciding with the announcement (22).

Conversely, the absence of a statistically significant increase for the colloquial term "Autism" may indicate that individuals exposed to official communications tend to adopt the precise terminology employed in those communications, rather than more commonly used lay expressions. This divergence may be attributable to several factors. It is possible that individuals exposed to the formal medical announcement internationally were more likely to employ the precise diagnostic terminology, "Autistic Spectrum Disorders", when seeking further information online.

The principal strength of this study lies in its utilization of real-world, population-level data to capture immediate public response to a health policy announcement, unmediated by recall bias or survey instruments. However, several limitations warrant consideration. Google Trends data reflects relative search volume and cannot be extrapolated to absolute numbers of individuals seeking information. The population using Google for health-related searches may not be representative of the general population or of the specific demographic groups most affected by the announcement, namely pregnant individuals and those planning pregnancy. Causal inference is constrained by the observational nature of the data, and while the temporal coincidence is compelling, confounding events occurring simultaneously cannot be definitively excluded. Additionally, the global scope of this analysis may obscure important regional variations in both media coverage intensity and search behavior. Future investigations should examine whether this information-seeking behavior translated into measurable changes in clinical conversations, medication utilization patterns during pregnancy, or healthcare provider counseling practices. Such studies would illuminate the full translational pathway from public health communication to behavioral outcomes.

Conclusion

This descriptive repeated cross-sectional study found that the September 2025 HHS announcement regarding acetaminophen use during pregnancy was associated with a significant surge in worldwide Google search volume for "Paracetamol", "Tylenol", and "Autistic Spectrum Disorders", indicating that the

announcement effectively captured international public attention and that individuals utilized the precise terminology employed in communication. These findings contribute to the growing body of infodemiological literature demonstrating that high-level policy announcements can produce measurable, immediate, and terminology-specific shifts in global information-seeking patterns. Further studies assessing the impact of public health announcements on medication utilization patterns, clinical counseling practices, and pregnancy outcomes would be beneficial to understand the full translational impact of such communications on maternal and child health.

Declarations

Ethics Informed consent

was not required for this study as it utilized publicly available, aggregated data without direct human involvement.

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Figures

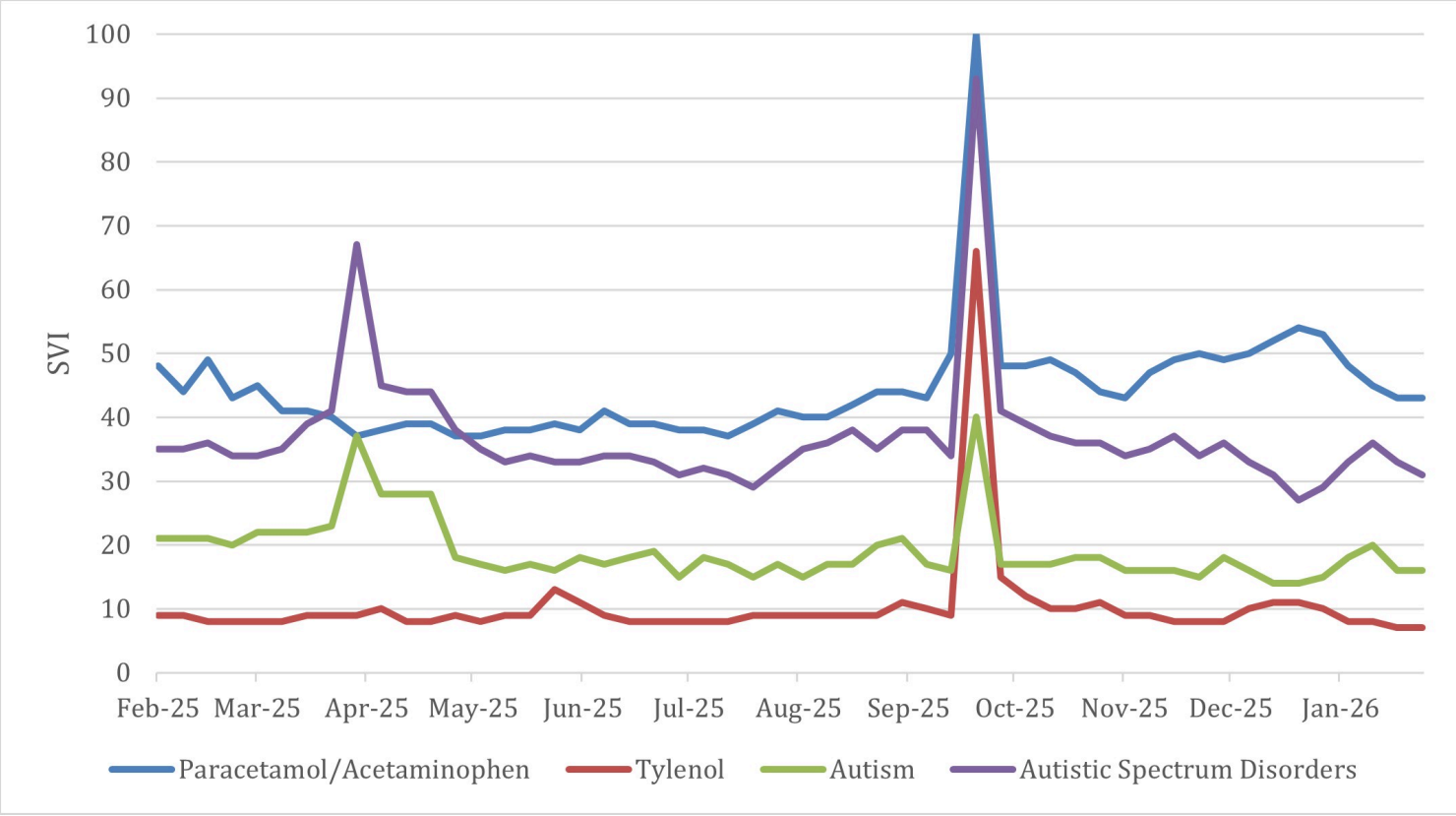


Figure 1

Worldwide Google Search Volume Index (SVI) for acetaminophen products and autism-related terms before and after the September 2025 HHS announcement