Altmetric For Zika Virus And Birth Defects - Reviewing The Evidence For Causality

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Abstract

Altmetric beyond traditional metrics and consider not just citation data, but also data regarding usage such as views and downloads, mentions in blogs and other media, as well as metrics related to social media. The term altmetrics was proposed in 2010, as a generalization of article level metrics, and has its roots in the #altmetrics hashtag. Although altmetrics are often thought of as metrics about articles, they can be applied to people, journals, books, data sets, presentations, videos, source code repositories, web pages, etc. Altmetric track who is talking about research papers and what they are saying. It constantly monitors social media sites, blog posts, news stories, Wikipedia, policy documents and other sources for mentions of research papers. This paper discussed Altmetric about article of Zika Virus and Birth Defects- Reviewing the Evidence for Causality. The result output has on Altmetric attention score 3804 on second February 2017. This article mentioned by 1319 twitters, 330 in new outlets and 144 in Facebook and also found 560 Mendeley readers of this research output.

Keywords

Altmetric, Attention score, Twitter Demography, Mendeley, Zika virus, Facebook,
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Introduction

Altmetrics are metrics and qualitative data that are complementary to traditional, citation-based metrics. They can include (but are not limited to) peer reviews on Faculty of 1000, citations on Wikipedia and in public policy documents, discussions on research blogs, mainstream media coverage, bookmarks on reference managers like Mendeley, and mentions on social networks such as Twitter. Sourced from the Web, altmetrics can tell you a lot about how often journal articles and other scholarly outputs like datasets are discussed and used around the world. For that reason, altmetrics have been incorporated into researchers' websites, institutional repositories, journal websites, and more. Altmetrics are a very broad group of metrics, capturing various parts of impact a paper or work can have. A classification of altmetrics was proposed by Impact Story in September 2012, and a very similar classification is used by the Public Library of Science:

- Viewed - HTML views and PDF downloads
- Discussed - journal comments, science blogs, Wikipedia, Twitter, Facebook and other social media
- Saved - Mendeley, CiteULike and other social bookmarks
- Cited-citations in the scholarly literature, tracked by Web of Science, Scopus, Cross Ref and others
- Recommended - for example used by F1000Prime.

Tomorrow Filters: Altmetrics

Altmetrics expand our view of what impact looks like, but also of what's making the impact. This matters because expressions of scholarship are becoming more diverse. Articles are increasingly joined by:

- The sharing of "raw science" like datasets, code, and experimental designs
- Semantic publishing or "nanopublication," where the citeable unit is an argument or passage rather than entire article.
- Widespread self-publishing via blogging, micro blogging, and comments or annotations on existing work.

Because Altmetrics are themselves diverse, they're great for measuring impact in this diverse scholarly ecosystem. In fact, Altmetrics will be essential to sift these new forms, since they're outside

the scope of traditional filters. This diversity can also help in measuring the aggregate impact of the research enterprise itself.

Advantages of Altmetrics

- Fast: Altmetrics are generated and gathered immediately. Traditional citations take time to accumulate.
- Diverse: Altmetrics capture data from a variety of sources, including the scholarly community, the media and the general public. Traditional impact measures only reflect the impact of a work within the academic setting. Moreover, some alternative measures looks beyond counts to content.
- Open: Data is typically gathered from a variety of open source web services, which means that conclusions based on Altmetrics can be verified by others.

Altmetrics are a burgeoning area of study and they are not meant to replace traditional measures of impact, but they do provide another way to assess research impact.

Literature Review

Altmetrics opens the door to a broader interpretation of the concept of impact and to more diverse forms of impact analysis" (Waltman & Costas, 2014. An overview of various altmetrics may be obtained from Priem and Hemminger (2010).Priem and Costello (2010) define tweets as Twitter citations if they contain a direct or indirect link to a peer-reviewed scholarly article. These Twitter citations can be counted and assessed as an alternative metric for papers. "Altmetrics refers to data sources, tools, and metrics (other than citations) that provide potentially relevant information on the impact of scientific outputs (e.g., the number of times a publication has been tweeted, shared on Facebook, or read in Mendeley). Twitter (www.twitter.com), for example, is the best known micro blogging application. This application allows the user to post short messages (tweets) of up to 140 characters. "These tweets can be categorized, shared, sent directly to other users and linked to websites or scientific papers … Currently there are more than 200 million active Twitter users who post over 400 million tweets per day" (Darling, Shiffman, Côté, & Drew, 2013).

An attractive possibility for measuring societal impact is seen in altmetrics (short for alternative metrics) (Mohammadi & Thelwall, 2014). There are already a number of studies concerning altmetrics. An overview of these studies can be found in Bar-Ilan, Shema, and Thelwall (2014), Haustein (2014), and Priem (2014). Many of these studies have measured the correlation between citations and altmetrics. Since the correlations were often at a moderate level, the results are difficult to interpret: Both metrics seem to measure something similar but not identical. The studies published so far cannot yet provide a satisfactory answer to the question whether altmetrics is appropriate for the measurement of societal impact or not. That is the reason for this investigation of the question.

About Research Article of Zika Virus and Birth Defects – Reviewing the Evidence for Causality

Title	**Zika Virus and Birth Defects — Reviewing the Evidence for Causality**
Published in	New England Journal of Medicine, April 2016
DOI	10.1056/nejmsr1604338
Pubmed ID	27074377
Authors	Rasmussen, Sonja A., Sonja A. Rasmussen, Denise J. Jamieson, Margaret A. Honein, Lyle R. Petersen, Rasmussen, Sonja A, Jamieson, Denise J, Honein, Margaret A, Petersen, Lyle R, Jamieson, Denise J., Honein, Margaret A., Petersen, Lyle R.
Abstract	The Zika virus has spread rapidly in the Americas since its first identification in Brazil in early 2015. Prenatal Zika virus infection has been linked to adverse pregnancy and birth outcomes, most notably Microcephaly and other serious brain anomalies. To determine whether Zika virus infection during pregnancy causes these adverse outcomes, we evaluated available data using criteria that have been proposed for the assessment of potential Teratogens. On the basis of this review, we conclude that a causal relationship exists between prenatal Zika virus infection and Microcephaly and other serious brain anomalies. Evidence that was used to support this . . .

Objectives

- To find out the Altmetric Attention score for the article of Zika Virus and Birth Defects – Reviewing the Evidence for Causality.
- To identify the Altmetric Attention Score in Context for this Article.
- To find out Twitter Demographics especially majority of the demographic type of this article.
- To discovered Mendeley statistics mentioned this Article. Especially professional status of mendeley readers mentioned this article.
- To know the various social media mentioned this research article.

Methodology

The article level metric (Altmetric) is the measurement of the impact and influence an article has in the world of research. Data collected from mainstream and social media is used to determine what type and how much peer-attention a research article is receiving. Installed Altmetric free bookmarklet in researcher Chrome to view the online shares and mentions of an article of Zika Virus and Birth Defects – Reviewing the Evidence for Causality with a single click. Researcher interestingly search about the Zika Virus output, meanwhile found this article in New England Journal of Medicine and copy that DOI using Altmetric bookmarklet to found the Article level metrics (Altmetric) for this article. After getting Altmetric page researcher tabulated and interpreted to complete the research.

Altmetric Output for Zika Virus and Birth Defects – Reviewing the Evidence for Causality

a). Altmetric Attention Score

The Altmetric attention score is an automatically calculated, weighted algorithm. It is base on three main factors. Firstly the volume of the Mentions (how many were there?), secondly the source of the mentions (where they high profile new stories, re-tweets, or perhaps a Wikipedia reference?), third the author of mentions (was it the journal publisher, or an influential academic?). Combined, the score represents a weighted approximation of all the attention Altmetric picked up for research output, rather than a raw total of the number of mentions.

This article (Zika Virus and Birth Defects – Reviewing the Evidence for Causality) has been mentioned in 330 news outlets, 29 blogs, 1 Policy source, 144 Facebook pages, 1319 tweets, 2 Wikipedia pages, 16 Google + pages and 3 Redditors post, 2Video uploads, 1Q&A thread pages. However, the score is 3804, not 4196. (Default values of each mentions News outlets-8, Blogs-6, Policy source- 3, Facebook pages- 0.25, Tweets-1, Wikipedia pages-3, Google + pages -1, Redditors post- 0.25, Video Uploads -0.25, Q&A thread pages-0.25).

The research output has on Altmetric Attentions Score of 3804 this it Altmetric high level measure and quantity of online attention that has received in the top 5% of all research outputs scored by Altmetric, High Attention score compared to outputs of the same age (99th percentile) High Attention Score compared to outputs of the same age and source (96th percentile.

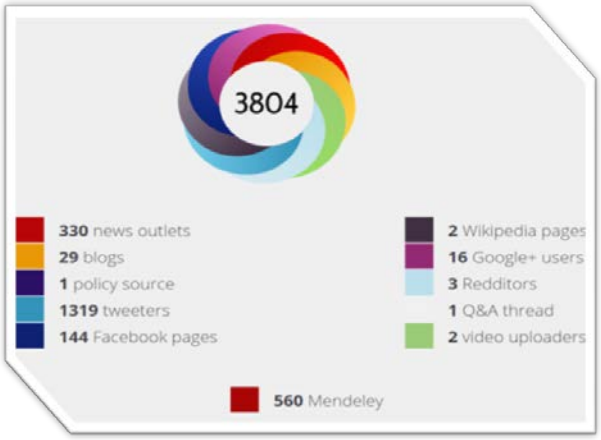


Figure -1-Altmetric badges (Donut)

b) Twitter Demographics

Altmetric categorizes users from Twitter based on their posting history and profile information. Where twitter data are available for an article, counts for each user category and geolocation data are included in the Demographics tab of the article details page. The data shown below were collected from the profiles of 1,319 tweeters who shared this research output.

Geographical breakdown

To generate a geographical map of tweeters, Altmetric geolocation users based on information in

their profiles on Twitter. The Geo key is a straightforward breakdown of where in the world users who share an article comes from. The majority of the twitter mentioned comes under the unknown category 43% (539) twitters, followed by 25% (336) percentage of the USA twitters and only one 1% of the twitters from Chile and Columbia.

Table 1- Twitter Demographic Geographical breakdown

S.N	Country	Count	Percentage
1	USA	336	25%
2	UK	57	4%
3	Mexico	43	3%
4	Canada	39	3%
5	Spain	28	2%
6	Brazil	24	2%
7	Australia	21	2%
8	Columbia	16	1%
9	Chile	15	1%
10	Other	171	13%
11	Unknown	569	43%
	Total	1319	100%

Demographic breakdown

To compile a table of twitter demographics, Altmetric look at keywords in profile descriptions, the types of journals that users link to, and follower lists to assign each profile a category: Member of the public - somebody who doesn't link to scholarly literature and doesn't otherwise fit any of the categories follow. Researcher - somebody who is familiar with the literature. Practitioner - a clinician or researcher who is working in clinical science. Science communicator - somebody who links frequently to scientific articles from a variety of different journals / publishers.

Table 2- Twitter Demographic Type

S.N	Demographic Type	Count	Percentage
1	Members of the public	931	71%
2	Practitioners (Doctors & Other Health care professionals	176	13%
3	Scientists	154	12%
4	Science Communicators (Journalist, Bloggers and Editors)	58	4%
	Total	1319	100%

Regarding the twitter demographic category majority of the twitters comes under the members of the public 71% (931), followed by 13% (176) twitters are practitioners (like doctors & Other health care professionals, 12% (154) of the twitters comes under the category of Scientists, Only 4% (58) twitters are coming under the science communicators. They are journalist, bloggers and editors.

Mendeley Readership Statistics

Mendeley is a global research collaboration platform and academic database. Mendeley s desktop, mobile and web applications help people to organize, share and discover the new research. Since its launch in 2009, Mendeley has grown to over three million users worldwide. Altmetric is the only Altmetrics provider to display such detailed information about the dissemination of an article amongst online reference manager readers, and users will also be able to click through from the Altmetric details page to the article record on the Mendeley site.

Table -3. Mendeley Readership Geographical Statistics

S.N	Country	Count	Percentage
1	USA	16	3
2	Brazil	13	2
3	UK	5	<1%
4	France	2	<1%
5	Germany	1	<1%
6	Saint Kitts and Nivis	1	<1%
7	Nigeria	1	<1%
8	South Africa	1	<1%
9	Mexico	1	<1%
10	Other	13	2%
11	Unknown	506	90%
	Total	560	100%

The data shown below were compiled from readership statistics for 560 Mendeley readers of this research output. Country wise Mendeley readership statistics majority of the respondents comes under unknown category 506 (90%), followed by USA 3%, Brazil & other countries 2% remaining countries of UK, France, Germany, Nigeria, South Africa, Mexico below 1%.

Table -4. Mendeley Readers by Professional status Statistics

S.N	Readers by Professional Status	Count	Percentage
1	Researcher	110	20%
2	Student > Bachelor	102	18%
3	Student > Master	99	18%
4	Student > PhD	70	13%
5	Other	45	8%
6	Other	134	24%
	Total	560	100%

About the demographic of Mendeley readers by professional status, Majority of the readers comes under the other's status (32%), followed by research, 20%, Above the Bachelor and Master level students are 18%, PhD holders are 13%.

Table -5. Mendeley Readers by discipline status Statistics

S.N	Readers by discipline Status	Count	Percentage
1	Medicine and Dentistry	232	41%
2	Agricultural and Biological Science	117	21%
3	Biochemistry, Genetics and Molecular Biology	41	7%
4	Immunology and Microbiology	32	6%
5	Nursing and Health professions	26	5%
6	Others	112	20%
	Total	560	100%

Discipline wise Mendeley reader statistics shows the majority of the readers are falling the medicine and dentistry discipline, followed by Agricultural and biological science, 21%, Other type of readers got third position 20%, 7% readers are Biochemistry, Genetics and Molecular Biology discipline, 6% readers are Immunology and Microbiology and Only 5% of the Mendeley readers nursing and health professionals.

Table -6. Research Output Tracks for AAS in Context

S.N	Research Output Details	Position	Total Outputs
1	All research Outputs	#34	7,171,211
2	Outputs from New England Journal of Medicine	#2	18,092
3	Outputs of Similar Age	#3	267,674
4	Outputs of Similar Age From New England journal of Medicine	#1	337

Altmetric has tracked 7,171,211 research outputs across all sources so far among this article got #34 position. Compared to these this one has done particularly well and is in the 99th percentile: it's in the top 5% of all research outputs ever tracked by Altmetric. So far Altmetric has tracked 18,092 research outputs from this source of New England journal of Medicine, among this article got second position. They typically receive a lot more attention than average, with a mean Attention Score of 42.6. This one has done particularly well, scoring higher than 99% of its peers**.** Older research outputs will score higher simply because they've had more time to accumulate mentions. To account for age we can compare this Altmetric Attention Score to the 267,674 tracked outputs that were published within six weeks on either side of this one in any source. This article got #3 positions. This one has done particularly well, scoring higher than 99% of its contemporaries. Altmetric also able to compare this research output to 337 others from the same source and published within six weeks on either side of this one. This article got First position. This one has done particularly well, scoring higher than 99% of its contemporaries**.**

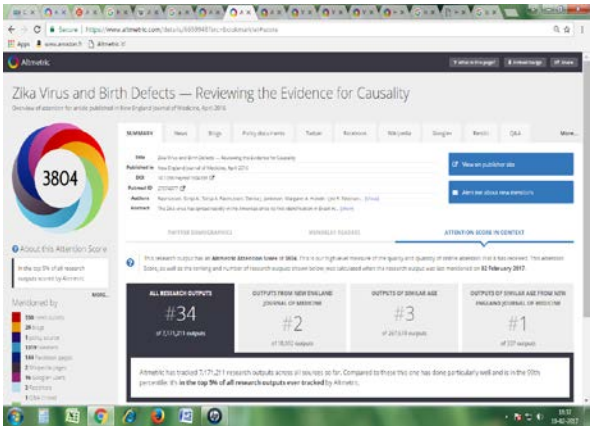


Figure -2-Altmetric detail Page

Findings and Conclusion

This paper discussed article about Zika Virus and Birth Defects- Reviewing the Evidence for Causality. The result output has on Altmetric attention score 3804 on second February 2017. This article mentioned by 1319 twitters, 330 in new outlets and 144 in Facebook and also found 560 Mendeley readers of this research output. Majority of the respondents comes under the unknown category 43% (539) twitters, followed by 25% (336) percentage of the USA twitters and only one 1% of the twitters from Chile and Columbia. Discipline wise mendeley readers statistics shows majority of the readers are falling the medicine and dentistry discipline, followed by Agricultural and biological science 21%, Other type of readers got third position 20%, 7% readers are Biochemistry, Genetics and Molecular Biology discipline, 6% readers are Immunology and Microbiology and Only 5% of the mendeley readers nursing and health professionals.

Researcher would like to mention Altmetric measures attention, not quality of is Article. People pay attention to this paper for all sorts of reasons, not all of them positive. Altmetric only tracks public attention. This article is discussed in private forums, offline in journal clubs and by email but Altmetric cannot track this. Altmetric tracks direct attention, that is to say attention focused on a specific research paper or dataset. More especially for a newspaper article or blog post etc. To be counted by Altmetric it must contain a hyperlink to or formal citation of a scholarly work. Altmetric provides to all with a single metric per output so that all can quickly compare relative levels of attention but it only make sense to use this when comparing within single discipline. The norms for attention very different for different scientific disciplines, just as the norms for citations are.

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