Public Health Research in the News: An Exploratory Study of Topics, Coverage, and Open Access Status

Mirian Ramirez, MLIS[a], Rachel J. Hinrichs MS, MSLS[b],

[a]Research Metrics Librarian, Ruth Lilly Medical Librarian, Indiana University School of Medicine, Indianapolis, Indiana, https://www.orcid.org/0000-0002-6233-7480, miririami@iu.edu

[b]Health Sciences Librarian, University Library, Indiana University, Indianapolis, Indiana, https://orcid.org/0000-0003-0762-744X, rhinrich@iu.edu

Cite as: Ramirez M, Hinrichs RJ. Public Health Research in the News: An Exploratory Study of Topics, Coverage, and Open Access Status. Hypothesis. 2024;36(1). doi:10.18060/27264

Abstract

Objectives: This study aims to identify and analyze the news outlets that reference research published by the Richard M. Fairbanks School of Public Health at Indiana University-Purdue University Indianapolis (FSPH). We analyzed the overall patterns of news sources, including the content type and overall coverage, the correlation with open access (OA) status, and the topics that received more attention in online news stories. We aim to contribute to a better understanding of the characteristics of news outlets that disseminate public health information, and the types of public health research referenced most often in the news.

Methods: We conducted a retrospective cohort study. The study population consisted of FSPH authors, the exposure was publishing journal articles by FSPH authors, and the outcome was news media attention. We compared the amount of media attention with other studies. We also compared open access journals versus commercially produced journals. We searched the Scopus database using an affiliation search to locate and retrieve the journal articles. Then we queried the Altmetric Explorer tool (altmetrics provider) for all the citations resulting from the Scopus search. We conducted a bibliometric analysis of publications from authors affiliated with the school of public health over five years (2015–2019). The searches were conducted in December 2021. We used the identifiers and the titles to compile the online news mention data and identify the titles featured in news outlets. The journal articles with news mentions and the news outlets that reference them were analyzed. The data were combined, cleaned up, and analyzed using Excel, and the subject analysis was produced using the VOSviewer software.

Results: For the 2015–2019 time frame, 778 publications were published by the FSPH. A total of 144 (18.5%) were highlighted in 2,079 online news stories from 655 news outlets. We analyzed the overall dataset of news outlets according to the source, content type, subject area, and country of publication. We also determined the attention likelihood of open access articles compared to those with closed access. We performed a co-occurrence analysis of the MeSH terms the articles featured in news outlets.

Discussion: Mentions in online news outlets can identify patterns and trends of attention and interest in research beyond academia. This bibliometric analysis helps to clarify the media outlets that distribute information on public health as well as the categories of research that are frequently featured in the media. The findings of this report, will help the library expand its research impact services and support the decision-making of leaders of public health schools for future publication and research strategy development directions.

Purpose and Background

Alternative impact indicators (or altmetrics) provide quantitative and qualitative data that highlight online attention (e.g., social media coverage, mentions in news stories, citations on Wikipedia) and influence of scholarly outputs. Altmetrics offer opportunities and advantages over traditional citation metrics for assessing impact, especially for measuring the societal impact of research and public engagement with scholarly work[1]. In particular, news media-based altmetrics (mentions in news) can demonstrate the reach and attention the research received beyond academia, especially if it has a specialized subject focus or covers a

wide geographical area[1–4]. For medical and health sciences research, mass-circulation news sources offer a way to connect with and interact with a wide audience as part of knowledge translation and dissemination processes[5].

In this analysis, we look at the characteristics of the online news sources that covered research conducted by the researchers of the IU Richard M. Fairbanks School of Public Health at Indiana University-Purdue University Indianapolis (FSPH) as well as the open access status of the articles that were referenced in the news. The results of this study can help public health school leaders make decisions about future publication, knowledge translation, dissemination, and research strategy directions.

Several studies address online media attention, including blogs, social media, and others, to evaluate the degree of correlation of mentions or Altmetric scores with the number of citations in various health sciences specialties[6–12] or general scientific journals[13]. Using bibliometrics and altmetric analysis, more studies have investigated the connection between citations and altmetric indicators. Dumas-Mallet et al[14]. analyzed the impact of English newspaper coverage from 6 countries on the citation counts of biomedical studies published in 38 different peer-reviewed journals with Impact Factors (ranging from JIF 5 to 51). Their findings evidence a positive association between newspaper coverage and the citation count of a scientific paper. Further, Palamar & Strain[7] analyzed traditional and social media coverage of manuscripts focusing on substance use and found that news and social media coverage were positively associated with a number of downloads and citations. According to their results, 13.9% of the articles were featured in news sources, with epidemiology papers receiving the most coverage.

Few studies have focused on the characteristics of the news sources that highlight research articles in mass media. One example is a paper by Moorhead et al. that analyzed the characteristics of news sources featuring cancer research[16]. In this study, the authors reviewed cancer research articles mentioned in the news and classified the news sources as either top traditional news sites or top digital-native sites. Their findings reveal that 1.88% of journal articles received at least one online news mention (totaling 642 mentions across 213 journal articles) and were cited by conventional news outlets much more frequently than digital-native and niche publications. According to the authors, the results suggest that prominent online news media outlets continue to under-represent research that focuses on cancer prevention and detection.

Open versus paywalled access to research articles may play a role in whether an article is mentioned in the news. There are several types of open access articles. Gold open access means that the journal provides immediate open access to all its articles and may sometimes charge a fee to the authors[17]. Green open access, on the other hand, means that a version of the publication is archived online, such as in a repository, while the final, published version of the article may or may not be open access[17]. Hybrid Gold open access articles are published in paywalled journals, but the authors pay a fee to make their article open access[17]. The literature has extensively discussed the citation advantage of open access publications over paywalled articles. According to a study by Dehdarirad and Didegah[13], the likelihood that a paper will be shared on social media is significantly correlated with its open access status. They compared the social media exposure of open access versus non-open access, and Gold against other types of open access articles in the life sciences and biomedicine fields. Their

findings demonstrated that open access was strongly associated with a higher likelihood of a paper being mentioned on the analyzed social media platforms and that the percentage of open access papers mentioned on altmetric platforms was higher than that of non-open access articles. The open access articles had a greater average number of tweets, Facebook postings, news posts, and blog posts compared to non-open access items. Further, Vadhera et al.[18] found that open access publications published in orthopedic journals obtained noticeably more citations and social and news media attention than subscription-based studies. Schultz[19] investigated how much coverage open access scholarly articles from different disciplines get in the news media. The author found evidence that there is a positive correlation between the use of Gold, Green, and Hybrid open access over paywalled articles; articles focusing on health received more news mentions after general sciences subject articles. It should be noted that In the United States, the National Institutes of Health (NIH) Open Access policy[20] plays a significant role in influencing the visibility and impact of research articles. Any publication resulting from the NIH-funded research is required to be made freely and publicly accessible through PubMed Central within a year of the official publication date.

To the best of our knowledge, there is no analysis of news media attention specific to a school of public health, which publishes a variety of research across public health domains. Therefore, this study aims to identify and analyze the news outlets that mentioned research published between 2015 and 2019 by the IU Richard M. Fairbanks School of Public Health at Indiana University-Purdue University Indianapolis (FSPH) to answer the following research questions:

1. How many articles published by the FSPH are mentioned in news stories?
2. What are the characteristics of news sources that mention the FSPH's public health research articles (type of news source, subject area, geographical scope, language of origin)?
3. What research topics covered by the FSPH's articles are most likely to be mentioned in news sources?
4. Are open access articles published by FSPH more likely to be referenced in news sources compared to those with paywalled access?

To answer these questions, we conducted a retrospective cohort study that employed bibliometric analysis to identify the overall patterns of the news sources that reference or mention the articles: type of news outlet, country of publication, language, geographical coverage, and subject area. We also determined whether Gold or Hybrid Gold open access scholarly articles were discussed more often in the news than subscription-access articles. Our results will contribute to a better understanding of the characteristics of news outlets that disseminate public health information and the types of research mentioned most often in the news.

Methods and Materials

We conducted a retrospective cohort study. The population consisted of FSPH authors, the exposure was publishing journal articles, and the outcome was news media attention. We compared the amount of news media attention with other studies. We also compared open access journals versus subscription journals. We conducted a bibliometric analysis, with a

focus on altmetrics (or alternative metrics), of publications from authors affiliated with the FSPH over five years (2015-2019). We chose to analyze news articles published prior to the COVID-19 pandemic as we suspected that the content of the research articles, open access status, and quantity of news mentions would likely change after 2020, and we wanted to establish a baseline. The data in this paper does not involve human subjects and is exempt from IRB approval.

Data collection

Publications by researchers affiliated with the FSPH over five years (2015-2019) were retrieved as raw .CSV data files from the Scopus database, which lists all authors' full addresses. While Scopus relies on various sources for indexing data and covers a wide range of disciplines and publications, it does not comprehensively index all relevant journals and publications in all fields. To collect the data, we queried the Scopus database to find documents authored by researchers affiliated with the FSPH; we developed an advanced search string using the affiliation field to catch variations of the School's name in the affiliations used by the authors of the publications. Queries were made using the advanced search option using the AFFIL() search field code and restricted to the timeframe covered in the study: *AFFIL("Fairbanks School of Public Health" OR "Fairbanks School of Health") AND (LIMIT-TO(PUBYEAR , 2019) OR LIMIT-TO(PUBYEAR, 2018) OR LIMIT-TO(PUBYEAR, 2017) OR LIMIT-TO(PUBYEAR, 2016) OR LIMIT-TO (PUBYEAR, 2015))*. The data was downloaded in December 2021.

To identify the articles mentioned in news outlets, we used the Altmetric Explorer for Academic Librarians (https://www.altmetric.com/explorer/login), using the scholarly identifiers, DOIs, and PubMed IDs available for all the publications collected in Scopus. The Altmetric Explorer (Academic Librarians version) tool (https://www.altmetric.com) serve as an altmetric data aggregator that tracks mentions of research outputs using scholarly identifiers (e.g., DOIs, PubMed IDs) of over 4,000 online news and mainstream media outlets around the world[21].

We used the Import.io (https://www.import.io/) web tool (trial version), which extracts online data from websites, to extract the news that references the articles from the Altmetric.com details page (**Image 1**) for each article that identified news mentions. The data collected included the following fields: Source Name, News URL, News headline/title, Date, and Altmetric.com URL details page. Data was exported to Excel spreadsheets and further aggregated to generate a list of unique news sources.

To determine the articles' open access status, we used the data provided by Scopus on Open Access status and the UnPaywall tool[22]. We identified articles that were either Gold or Hybrid Gold open access articles, which means that the article would be open access at the time of publication. Green open access articles are made publicly accessible by archiving a copy of the article in a repository. However, there was no way for us to tell when the article had been deposited, so we could not be sure that the article was openly available when the news media were accessing it.

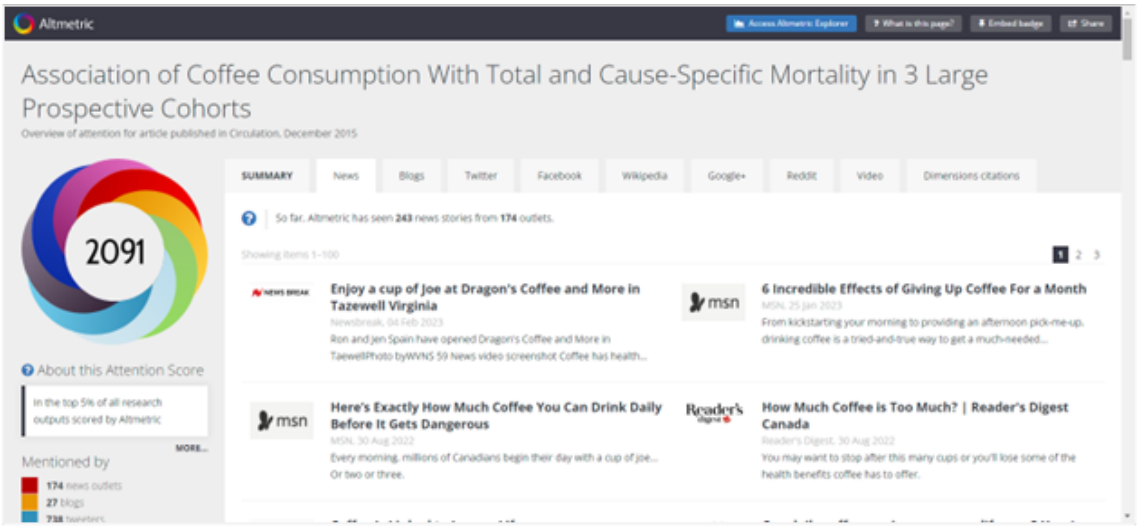

Image 1. Overview of the details page showcasing newscoverage tracked by Altmetric.com https://www.altmetric.com/details/4768439/news

Data Analysis

The analysis was based on the data from documents identified on Altmetric.com using scholarly identifiers. To ensure the authors' inclusion in the analysis, we examined the articles referenced in the news sources to double-check the authors' institutional affiliation. One of the major tasks in the data analysis was to tag all the identified news sources with the various categories we created. To categorize and code the news sources, we created categories (**Table 1**) that could group the type of news outlet, geographical scope, and subject area. To gather information we primarily rely on *Wikipedia* entries related to news sources as they often contain detailed descriptions of various media outlets present in our dataset.) Additionally we used the online *Ulrichsweb* serials directory (https://ulrichsweb.serialssolutions.com/) to check information on the source. We coded each news source primarily using the descriptions of the sources found in the "about" section of the websites. The serial type was determined by the descriptions from the websites mentioned previously. The geographical scope was obtained mainly from the description of the source. The subject area was determined by analyzing the source's main point of interest. The language was identified by navigating to the source's website or reading the description (usually found under 'About') provided then on its website; we used the ISO 639.223[23] language names for coding the sources. The list of news sources was examined by both researchers, who noted any discrepancies and attempted to reconcile them.

Table 1. Categories were created for coding news sources: Serial type, Geographical scope, and Subject area

Serial Type	**Geographical Scope**	**Subject Area**
News website	Local/city	Arts, culture, and entertainment
Online magazine	State	Business & Economics
Online newspaper	Regional	Consumer health
Radio	National	General Interest/mass circulation newspapers
Scholarly journal	International	
Trade journal		Politics
Website		Public health
health policy		
		Science
Technology		

To create the topic analysis of the articles referenced in the news, we queried the PubMed database to find and collect the MeSH terms of the articles. Full PubMed records were exported to VOSviewer software (version 1.6.17) to run the MeSH term co-occurrence analysis. The results of the term co-occurrence analysis were synthesized in a chart with topics hierarchically structured, using the RawGraphs online tool (version 2.0). To generate the topic co-occurrence analysis, the following MeSH categories were excluded: gender (female, male), organisms (humans, animals), and geographic-related terms (countries, regions).

We used a chi-square test to determine if there was a significant association between Gold or Hybrid Gold open access status and news mentions. $P < 0.05$ was considered as significant.

Results

Mentions in news outlets

Overall, a total of 778 articles were published by the FSPH during 2015-2019 (**Figure 1**). We identified a total of 144 (18.5%) documents that were referenced in 2,079 news articles from 643 news outlets (until the day of final search and extraction, December 2021). For articles referenced in the news, on average, each document was mentioned 14 times; 99 articles were mentioned more than once. Among the top journals with the most articles mentioned in news stories with (greater than or equal to 100 mentions) are: *Circulation*, *Nature Genetics*, *JAMA Network Open*, *New England Journal of Medicine*, *Nature*, and *Alzheimer's and Dementia* (**Table 2**). *Yahoo/Yahoo News* is the news source that mentioned the most articles (**Table 3**), with 78 news stories identified.

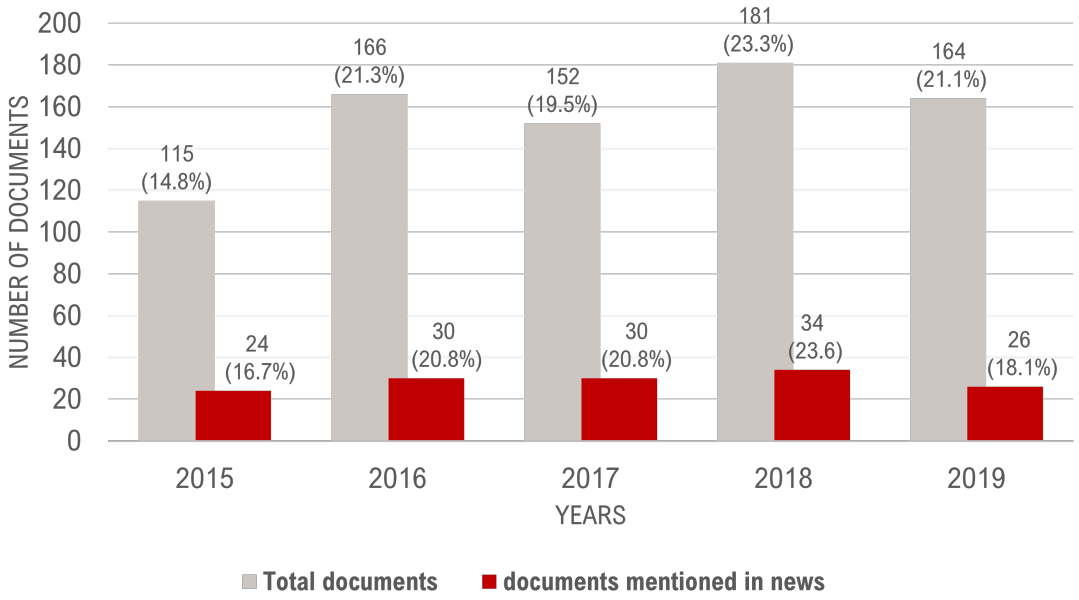

Figure 1: Distribution of articles published for the period 2015–2019: comparison of the 778 documents published vs. the 144 (18.5%) documents mentioned in the news.

Table 2. Top 20 journals publishing the most mentioned articles, published by the FSPH, in the news.

Journal Title	**Number of mentions in news**	**Number of articles**	**Citation count**
Circulation	255(12.2%)	2	133
Nature Genetics	203 (9.7%)	6	834
JAMA Network Open	169 (8.1%)	1	33
New England Journal of Medicine	129 (6.2%)	3	379
Nature	127 (6.1%)	2	396
Alzheimer's and Dementia: Translational Research and Clinical Interventions	100 (4.8%)	1	58
Radiology	68 (3.2%)	1	20
Cancer Epidemiology Biomarkers and Prevention	61 (2.9%)	1	13
Nature Communications	61 (2.9%)	7	548
Hepatology	57 (2.7%)	1	20
JAMA - Journal of the American Medical Association	52 (2.5%)	2	142
American Journal of Industrial Medicine	48 (2.3%)	1	5
Journal of Infectious Diseases	47 (2.2%)	1	61
mBio	45 (2.1%)	1	63
Hypertension	45 (2.1%)	1	98
Environmental Health: A Global Access Science Source	39 (1.8%)	1	69
Sexual Health	39 (1.8%)	1	45
American Journal of Clinical Nutrition	39 (1.8%)	2	94
Journal of the American Medical Informatics Association	38 (1.8%)	8	196
JAMA Pediatrics	24 (1.1%)	2	69

Table 3. Top 10 news sources that mentioned the most articles published by the FSPH.

Name of News Source	**URL**	**Subject Area**	**Count Of News Stories**
Yahoo! Or Yahoo! News	news.yahoo.com/	General interest/mass circulation	78 (3.8%)
MSN	www.msn.com	General interest/mass circulation	56 (2.7%)
MedicalXpress	medicalxpress.com	Medicine	47 (2.3%)
EurekAlert! 43 (2.1%)	www.eurekalert.org	Science	Technology
Medical Health News	www.medicalhealthnews.net	Consumer Health	43 (2.1%)
The New Age (ZA)	www.thenewage.co.za	General interest /mass circulation	39 (1.9%)
Physician's Briefing	www.physiciansbriefing.com	Medicine	31 (1.5%)
Health Medicine	healthmedicinet.com	Medicine	28 1.3%)
Medical News Today	www.medicalnewstoday.com	Medicine	27 (1.3%)
The Medical News	www.news-medical.net	Medicine	23 (1.1%)

News Sources Characteristics

The news sources vary by serial type, subject area, geographical scope, and language. Most of the news sources identified are news websites, followed by web versions of general interest/mass-circulation newspapers, mainly with a national geographical scope. Over half of the news sources fall under the "news websites" or "online newspapers" categories (**Figure 2**). We also identified that specialized news sources focusing on medicine, science technology, consumer health, and public health health policy perspectives represent 26% of the news sources, which is considerably low compared to those with general interest or mass circulation types at 62% (**Figure 3**). The percentage of trade journals, scholarly journals, and online magazines referencing the articles represents 16% of the news sources. The most common geographical scope of the news sources is national (44%), followed by international scope (**Figure 4**). The country of origin of the news sources includes the United States, the United Kingdom, Australia, and India, and 81.03% corresponding to English-only sources, 4.04% to multiple languages (including English), and near 15% to a non-English language source (**Figure 5** and **Table 4**).

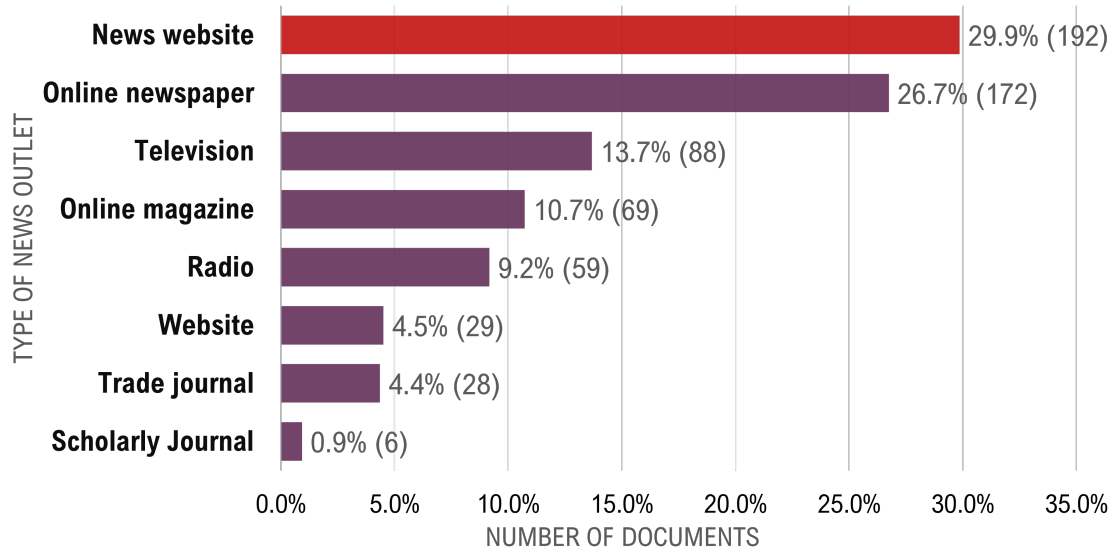

Figure 2: Distribution of news sources by type

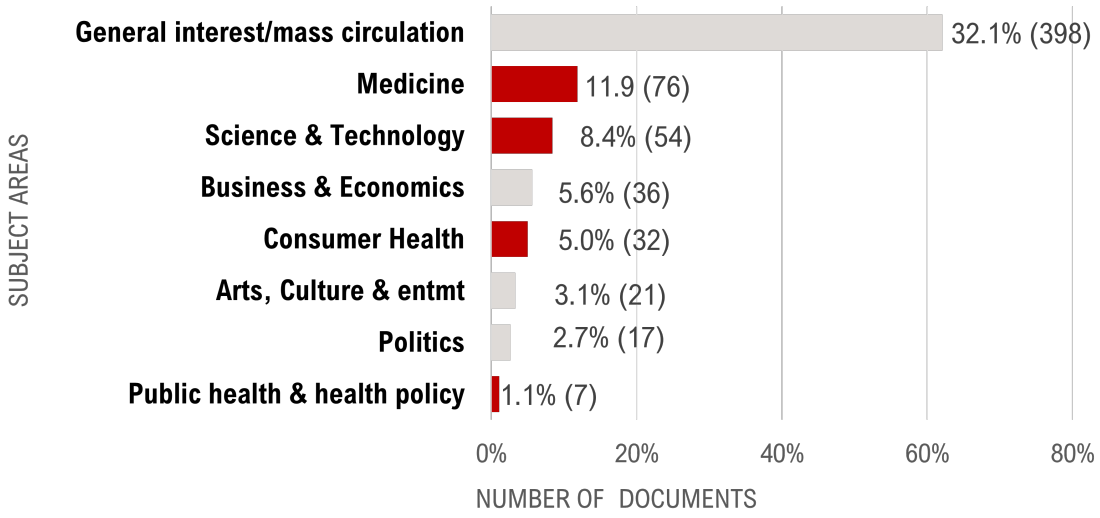

Figure 3: Distribution of news sources by subject area

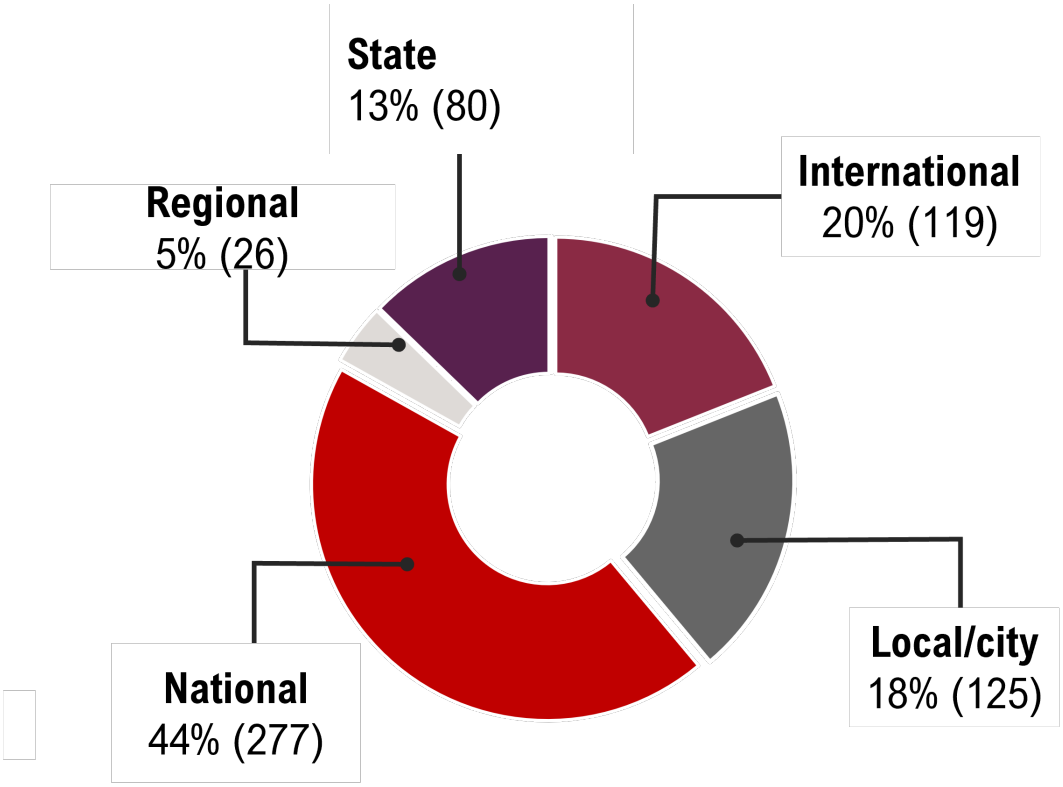

Figure 4: Distribution of news sources by geographical scope of news sources

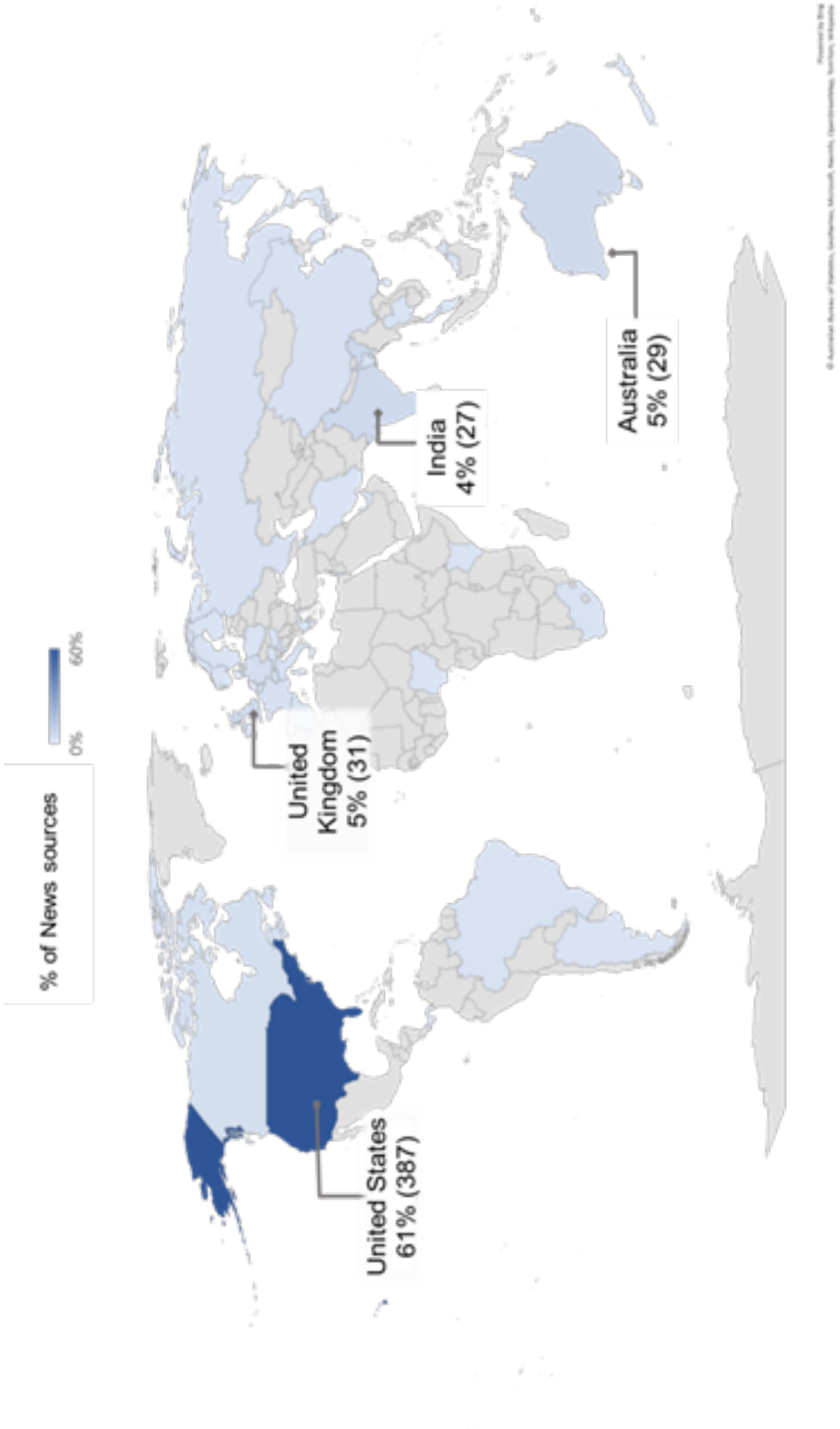

Figure 5: Distribution of news sources identified across 45 countries

Table 4. Distribution of news sources by language

Language	**Total news sources**	**Percentage**
English	521	81.03%
Multiple languages	26	4.04%
German	20	3.11%
French	14	2.18%
Italian	12	1.87%
Spanish	12	1.87%
Dutch	7	1.09%
Portuguese	7	1.09%
Russian	4	0.62%
Chinese	4	0.62%
Swedish	3	0.47%
Hungarian	2	0.31%
Finnish	2	0.31%
Norwegian	2	0.31%
Greek	2	0.31%
Polish	1	0.16%
Japanese	1	0.16%
Danish	1	0.16%
Arabic	1	0.16%
Hindi	1	0.16%
Grand Total	643	100.00%

Topics of FSPH articles mentioned in news

The identified research papers mentioned in the news covered a wide range of topics. The data in **Figure 6** represents the nodes of MeSH terms with equal or greater than 8 co-occurrences in articles mentioned in news sources. We grouped the nodes in a hierarchical structure classified by broader MeSH categories: Diseases, Phenomena and Processes, Epidemiological Methods, and Age Groups. The size of the nodes is given by the number of co-occurrences of the MeSH terms assigned to the articles featured in the news. The most common topics of articles referenced in the news were Genome-wide Association Study, Genetic Predisposition to Disease, Risk Factors, and Skin Neoplasms; and within age groups, Middle Age and Adults were mostly assigned.

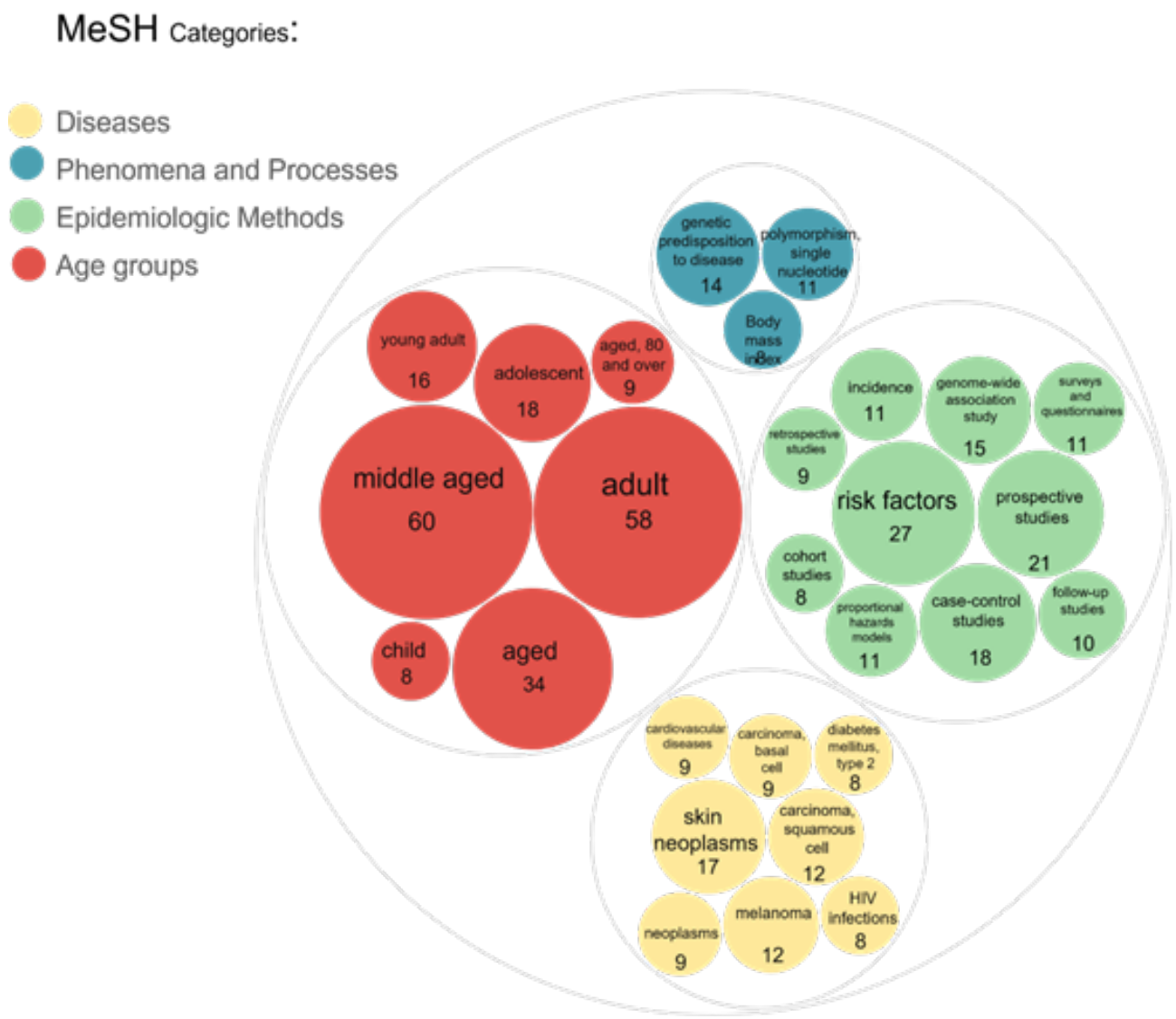

Figure 6: MeSH terms with greater than or equal to 8 co-occurrence in articles by the FSPH mentioned in News sources.

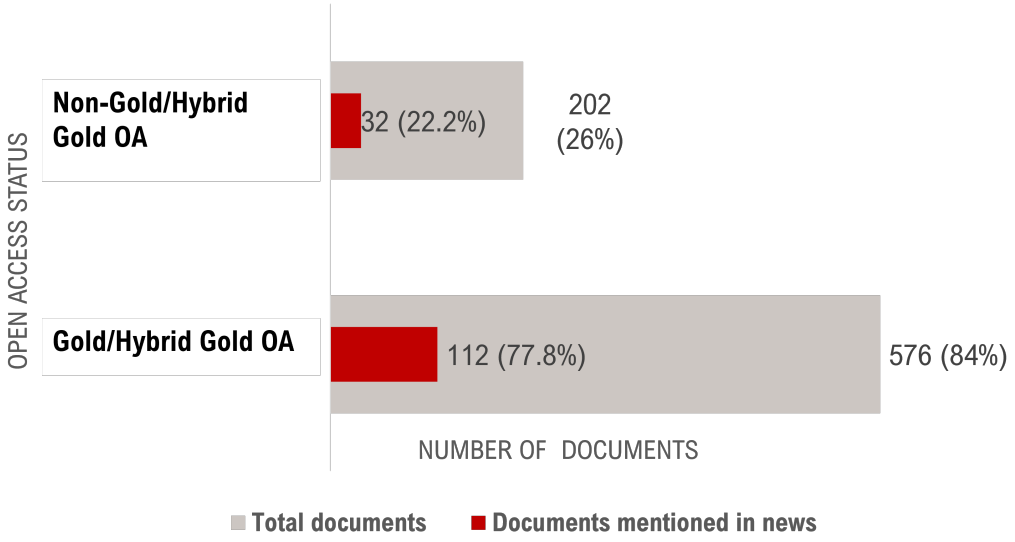

Figure 7: Distribution of articles mentioned in news according to Gold/Hybrid and Gold open access status

Open access status of articles published by the FSPH with number of news mentions

Overall, 202 documents (26%) out of 778 have Gold or Hybrid Gold open access status. Only 32 (15.8%) of the open access articles were featured in the news, whereas 112 (19.4%) of the paywalled articles were mentioned (**Figure 7**). Using a chi-square test, we found no significant association between Gold/Hybrid Gold open access status and being mentioned in the news (n = 778; X = 1.29, df = 1, p = .26).

Discussion

We found that 18.5% of articles published by the FSPH from 2015-2019 were referenced in the news. This percentage is in line with many prior studies examining the rates of media coverage of scholarly literature, ranging from 13.9% to 17%[19,24,25]. Many of those same studies used different criteria for identifying research articles, such as high impact journals[19], a sample of cancer research articles selected from the Medline database[25], or United States government-funded research[16,24]. Our study, on the other hand, focused on the research output of one school of public health, which produces a wide range of public health research in areas such as health policy, health services, environmental health, epidemiology, genomics, and behavioral health. That our percentage of articles mentioned in the news is similar could mean that faculty from the FSPH publish in high impact journals, have government funding, or are writing on topics that generate media interest. Based on the topic analysis of research highlighted in the news, the most common MeSH categories were epidemiologic methods and certain diseases, skin neoplasms being the most prominent. This finding is in line with other studies that found that epidemiological studies gain more news mentions than non-epidemiology studies[18,19], and that melanoma, a type of skin cancer, is the third most mentioned cancer type in the news[16].

We also found that the FSPH's research was most likely to be mentioned in general interest

news websites with a national United States-focused coverage. Our category of news website refers to digital native news sources as opposed to traditional newspapers that have an online version such as New York Times or Wall Street Journal. The fact that news websites have overtaken online newspapers in our study as the dominant reporter of public health news suggests that researchers should be open to targeting online news organizations rather than focusing only on traditional newspapers. These online news organizations may be curating their content to specific groups, and so could be more likely to report on certain public health topics. For example, while 62% of the news sources were "general interest," the remaining 38% of news sources reported on niche areas such as medicine (12%), science & technology (8%), business and economics (6%), and even arts, culture, and entertainment (3%). While most articles were discussed in English-language news sources, 20% were discussed in non-English or multi-language news sources. Using news sources to demonstrate reach to a large, mass-interest audience or a smaller niche-audience could be beneficial to a researcher or public health school in determining research attention and impact.

While national news sources were the most common in this study (44%), local news sources should not be overlooked when it comes to public health. We found that 18% and 13% of news sources covered local/city and state news, respectively. When considering research dissemination, audience size is important, but may not take into account local community health needs or demographics that may be more interested in certain types of research[16]. A Pew Research Center study found that older Americans, Black adults, and those with a high school education or less are more likely to be interested in local news[26]. Community health coalitions and public health practitioners working with nonprofit organizations or small local health departments may have limited access to paywalled research[27], and could benefit from learning about new research from local news sources, especially if the research has local implications. Future studies could consider what public health news is considered of local importance, and how local newspapers select and curate the health research news they include.

A surprising finding of our study was that open access articles were not more likely to be mentioned than paywalled articles. This finding contrasts with many other studies that found that open access studies have higher mentions in the news and social media[18,19,28]. Our study may not have had a big enough sample size to detect a difference. Another reason could be that we only counted gold and hybrid gold studies as open access because we knew they would be open access at the time of publication. Many of the studies that we labeled as paywalled could have been available through green open access methods such as a deposit in an institutional repository or PubMed Central at the time of the news mention, but there was no way for us to determine that. In her analysis, Schultz found that while green and hybrid open access articles together comprised 6.4% of her sample, they represented 23.3% of the articles with news mentions, whereas gold open access articles were 66.6% of the sample, but only represented 53.8% of the news mentions[19]. If green open access plays an important role in providing access to scientific articles for the news media, our study may have underestimated the association between open access and news mentions.

In addition to this potential underestimation between open access and news mentions, our study had several other limitations. First, our study only included research from one school of public health rather than sampling from published public health articles. This means our results cannot be generalized to other public health schools or public health research in

general. However, it does demonstrate a replicable method for other schools of public health to track media attention to their own research. Second, it is possible that we could have misclassified a news source, as it was sometimes difficult to determine the geographical scope of coverage, and the difference between a news website and online newspaper. Third, while Almetric.com has been found to have a high precision and acceptable recall for news mentions, it may have missed some news mentions that do not link to the research articles, mention the author or journal, or are in non-English media[29]. Because of this, our estimate of 18.5% news coverage may be conservative.

Conclusion

The results of this retrospective cohort study provide an overview of the patterns and trends of attention and interest in research beyond academia of articles published by a school of public health. This bibliometric analysis contributes to a better understanding of news outlets that disseminate public health information and the types of research mentioned most often in the news. This study's insights are valuable for expanding the library's research impact services by developing a pilot school-level report based on altmetrics for internal research departments and for schools of public health interested in tracking news mentions to their published research.

Acknowledgments

The authors would like to thank Altmetric.com for allowing them access to their data through the Altmetric Explorer for Academic Librarians for this study.

References

1. Thelwall M. Measuring societal impacts of research with altmetrics? common problems and mistakes. J Econ Surv. 2021 Dec;35(5):1302–14. doi:10.1111/joes.12381

2. Kortelainen T. What Is Societal Impact and Where Do Altmetrics Fit into the Equation? 2019 Dec 18;2(1):6. doi:10.29024/joa.21

3. Kassab O, Bornmann L, Haunschild R. Can altmetrics reflect societal impact considerations?: Exploring the potential of altmetrics in the context of a sustainability science research center. Quant Sci Stud. 2020 Mar 10;1–18. doi:10.1162/qss_a_00032

4. Ortega JL. How do media mention research papers? Structural analysis of blogs and news networks using citation coupling. J Informetr. 2021 Aug;15(3):101175. doi:10.1016/j.joi.2021.101175

5. Jaques H. Get your research reported well in the news. BMJ. 2011 Jan 19;c6921. doi:10.1136/bmj.c6921 6. Wang J, Alotaibi NM, Ibrahim GM, Kulkarni AV, Lozano AM. The Spectrum of Altmetrics in Neurosurgery: The Top 100 "Trending" Articles in Neurosurgical Journals. World Neurosurg. 2017 Jul 1;103:883-895.e1. doi:10.1016/j.wneu.2017.04.157

7. Rosenkrantz AB, Ayoola A, Singh K, Duszak R. Alternative Metrics ("Altmetrics") for Assessing Article Impact in Popular General Radiology Journals. Acad Radiol. 2017

Jul;24(7):891–7. doi:10.1016/j.acra.2016.11.019

8. Jack RA, Sochacki KR, Morehouse HA, McCulloch PC, Lintner DM, Harris JD. Correlation Between Quality of Evidence and Number of Citations in Top 50 Cited Articles on Elbow Medial Ulnar Collateral Ligament Surgery. Orthop J Sports Med. 2018 Apr;6(4):2325967118768216. doi:10.1177/2325967118768216

9. Goyal DKC, Galetta MS, Fang T, Mangan J, Lendner M, Vaccaro AR, et al. The impact of social media in orthopaedics. Curr Orthop Pract. 2019 Sep;30(5):419–22. doi:10.1097/BCO.0000000000000788

10. Kunze KN, Richardson M, Bernstein DN, Premkumar A, Piuzzi NS, McLawhorn AS. Altmetrics Attention Scores for Randomized Controlled Trials in Total Joint Arthroplasty Are Reflective of High Scientific Quality: An Altmetrics-Based Methodological Quality and Bias Analysis. J Am Acad Orthop Surg Glob Res Rev. 2020 Dec;4(12):e20.00187. doi:10.5435/JAAOSGlobal-D-20-00187

11. Abdullah Y, Mathew AJ, Alokozai A, Stamm MA, Mulcahey MK. Positive Association Between Online Attention and the Bibliometric Impact of Shoulder Instability Publications. Arthrosc Sports Med Rehabil. 2022 Aug 1;4(4):e1539–44. doi:10.1016/j.asmr.2022.04.023

12. Kirloskar KM, Civilette MD, Rate WR, Cohen AS, Haislup BD, Nayar SK, et al. The 50 most impactful articles on the medial ulnar collateral ligament: An altmetric analysis of online media. SAGE Open Med. 2022 Nov 24;10:20503121221129920. doi:10.1177/20503121221129921

13. Huang W, Wang P, Wu Q. A correlation comparison between Altmetric Attention Scores and citations for six PLOS journals. van den Besselaar P, editor. PLOS ONE. 2018 Apr 5;13(4):e0194962. doi:10.1371/journal.pone.0194962

14. Dumas-Mallet E, Garenne A, Boraud T, Gonon F. Does newspapers coverage influence the citations count of scientific publications? An analysis of biomedical studies. Scientometrics. 2020 Apr;123(1):413–27. doi:10.1007/s11192-020-03380-1

15. Palamar JJ, Strain EC. News and social media coverage is associated with more downloads and citations of manuscripts that focus on substance use. Drug Alcohol Depend. 2021 Jan 1;218:108357. doi:10.1016/j.drugalcdep.2020.108357

16. Moorhead L, Krakow M, Maggio L. What cancer research makes the news? A quantitative analysis of online news stories that mention cancer studies. PLOS ONE. 2021 Mar 10;16(3):e0247553. doi:10.1371/journal.pone.0247553

17. Barnes L. Green, Gold, Diamond, Black – what does it all mean? [Internet]. Open Book Publishers Blog. 2018 [cited 2023 Jun 16]. doi:10.11647/OBP.0173.0089

18. Vadhera AS, Lee JS, Veloso IL, Khan ZA, Trasolini NA, Gursoy S, et al. Open Access Articles Garner Increased Social Media Attention and Citation Rates Compared With Subscription Access Research Articles: An Altmetrics-Based Analysis. Am J Sports Med.

2022 Nov;50(13):3690–7. doi:10.1177/03635465221124885

19. Schultz T. All the research that's fit to print: Open access and the news media. Quant Sci Stud. 2021 Nov 5;2(3):828–44. doi:10.1162/qss_a_00139

20. National Institutes of Health. NIH Public Access Policy Details [Internet]. 2009 [cited 2023 Apr 4]. Available from: https://publicaccess.nih.gov/policy.htm

21. Altmetric Limited. Our sources [Internet]. Altmetric. 2015 [cited 2023 Feb 12]. Available from: https://www.altmetric.com/about-our-data/our-sources-2/

22. Priem J, Piwowar H. The Unpaywall Dataset. 2018;95760 Bytes.

23. International Organization for Standardization. ISO 639-2 Language Code List - Codes for the representation of names of languages (Library of Congress) [Internet]. 2017 [cited 2023 Jan 15]. Available from: https://www.loc.gov/standards/iso639-2/php/code_list.php

24. Maggio LA, Ratcliff CL, Krakow M, Moorhead LL, Enkhbayar A, Alperin JP. Making headlines: an analysis of US government-funded cancer research mentioned in online media. BMJ Open. 2019 Feb 1;9(2):e025783. doi:10.1186/s41073-017-0033-z

25. Haneef R, Ravaud P, Baron G, Ghosn L, Boutron I. Factors associated with online media attention to research: a cohort study of articles evaluating cancer treatments. Res Integr Peer Rev. 2017;2:9. doi:10.1186/s41073-017-0033-z

26. Rosenberg S. Older Americans, Black Adults and Americans With Less Education More Interested in Local News [Internet]. Pew Research Center's Journalism Project. 2019 [cited 2023 Apr 4]. Available from: https://www.pewresearch.org/journalism/2019/08/14/older-americans-black-adults-and-americans-with-less-education-more-interested-in-local-news/

27. Hunt SL, Bakker CJ. A qualitative analysis of the information science needs of public health researchers in an academic setting. J Med Libr Assoc [Internet]. 2018 Apr 5 [cited 2023 Mar 21];106(2). Available from: http://jmla.pitt.edu/ojs/jmla/article/view/316

28. Dehdarirad T, Didegah F. To What Extent Does the Open Access Status of Articles Predict Their Social Media Visibility? A Case Study of Life Sciences and Biomedicine. J Altmetrics. 2020 Aug 12;3(1):5. doi:10.29024/joa.29

29. Fleerackers A, Nehring L, Maggio LA, Enkhbayar A, Moorhead L, Alperin JP. Identifying science in the news: An assessment of the precision and recall of Altmetric.com news mention data. Scientometrics. 2022 Nov 1;127(11):6109–23. doi:10.1007/s11192-022-04510-7