

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

Library Philosophy and Practice (e-journal)

Libraries at University of Nebraska-Lincoln

Winter 12-7-2019

Article Level Metrics of PLOS: A Case Study of Top Five NIRF-2017 Institutes in Engineering

Ramani Ranjan Sahu Librarian Grade -III

AllMS Jodhpur, sahu.ramaniranjn0@gmail.com

Lambodara Parabhoi Professional Assistant

Indian Institute of Advanced Study Rashtrapati Nivas, Shimla, Himachal Pradesh,

suresh19871987@gmail.com

Follow this and additional works at: <https://digitalcommons.unl.edu/libphilprac>



Part of the [Library and Information Science Commons](#)

Sahu, Ramani Ranjan Librarian Grade -III and Parabhoi, Lambodara Professional Assistant, "Article Level Metrics of PLOS: A Case Study of Top Five NIRF-2017 Institutes in Engineering" (2019). *Library Philosophy and Practice (e-journal)*. 3731.

<https://digitalcommons.unl.edu/libphilprac/3731>

Article-Level Metrics of PLOS: A Case Study of Top Five NIRF-2017 Institutes in Engineering

By

Ramani Ranjan Sahu

Librarian Grade-III

AIIMS Jodhpur

Email: sahu.ramaniranjana0@gmail.com

And

Lambodara Parabhoi

Professional Assistant

Indian Institute of Advanced Study Rashtrapati Nivas,

Shimla, Himachal Pradesh

Email: suresh19871987@gmail.com

Abstract:-

Altmetrics can be used for research evaluation of an original publication as well as the organization level. Several studies have documented on Altmetrics. However, there are very few studies conducted on an organizational level. This paper set out to examine how the papers published by the top five NIRF-2017 institutes were shared, saved, views on different social media platforms. This study used PLOS Altmetrics data to identify article-level metrics (ALM) of these 5 institutes. A total of 208 documents retrieved from the PLOS database. Results showed that IIT Delhi contributed the highest 54 documents between 2008 and 2017. Similarly, the publications published by IIT Bombay had more significant social media attention. It noted that Altmetrics could be used as a tool to find out the early impact of an article.

Keywords: - Altmetrics, Article level Metrics (ALM), NIRF-2017, PLOS

Introduction: -

Citation count is a traditional method for analyzing the individual research impact, and it takes several months to get a citation of an article whereas, Altmetrics gives a real-time impact of an article (Thelwall, 2017). (Collister, Kirschner, Bradbury, & Deliyannides, 2017) Altmetrics is a combination of two words "alternative" and "metrics," which make use of counting individual publication impacts base on the non-traditional method. Jason Priem introduced the term in the year 2010 (Kelly, 2017). It is article-level metrics or alternative metrics to measure the impact of individual articles or scholarly content through social media. It collects, download, and measure the data from social media where, the people likes, discuss, comment, share, views, and review using online social media platform. It is one of the important tools to measure how effectively the scholarly published articles are being discussed, shared, viewed, and used. Besides, Altmetrics are frequently used by academicians as well as publishers to provide the early impact of evidence than citation count (Thelwall & Nevill, 2018). (Adie & Roe, 2013a) stated, "Article-level metrics are quantitative or qualitative indicators of the impact that a single article has had." Several studies have documented on Altmetrics. However, there are very study conducted on an organizational level. The current study is to examine Article-level metrics (ALM) of the top 5 NIRF-2017 institutes fallen in the Engineering category.

Objectives-

- To study the numbers of articles published from 2008-2017 in the PLOS database.
- To find out the highest view and downloaded articles.
- To study the number of citations in CrossRef, Scopus, PubMed, Data cite, and Web of Science.
- To find out the online social media attention on the published article.
- To study the readership on CiteUlike, Mendeley, and Figshare.
- To analyze the most prolific authors.

Review of Related Woks:-

The Public Library of Science (PLOS) is a database, which is freely available to the public. This database collects social metrics like download, views, likes, save of articles published in the PLOS journals. Also, it gives traditional metrics (Scopus citations and Web of Science citation) like citations (Lin & Fenner, n.d.). (Adie & Roe, 2013b) it aims to simplify the article-level metrics. Academics are frequently visible on the web and on different social media platforms. Moreover (Gordon, Lin, Cave, & Dandrea, 2015) stated that article-level metrics (ALMs) had been rapidly growing popularity among academics, publishers, funders, and research organizations. ALM came into existence in the year 1990s. (Chavda & Patel, 2016) in recent past year's academics have been using social media tools to exchange a few words and discuss scholarly publications. There are several papers has been discussed on various issues of Altmetrics in general. (Patthi, Prasad, Gupta, & Singla, 2017) has correlated between conventional citation and Altmetrics publications related to the medical field. Similarly, (Bornmann & Haunschild, 2018) correlated traditional metrics like citation counts with Altmertics. (Araújo, Sorensen, Konkiel, & Bloem, 2017) review the top 15 Altmetric scores of publications related to Parkinson's disease. The current study is on article-level metrics of a research paper published by the top 5 institutes NIRF-2017 ranking from the engineering category.

Methods:

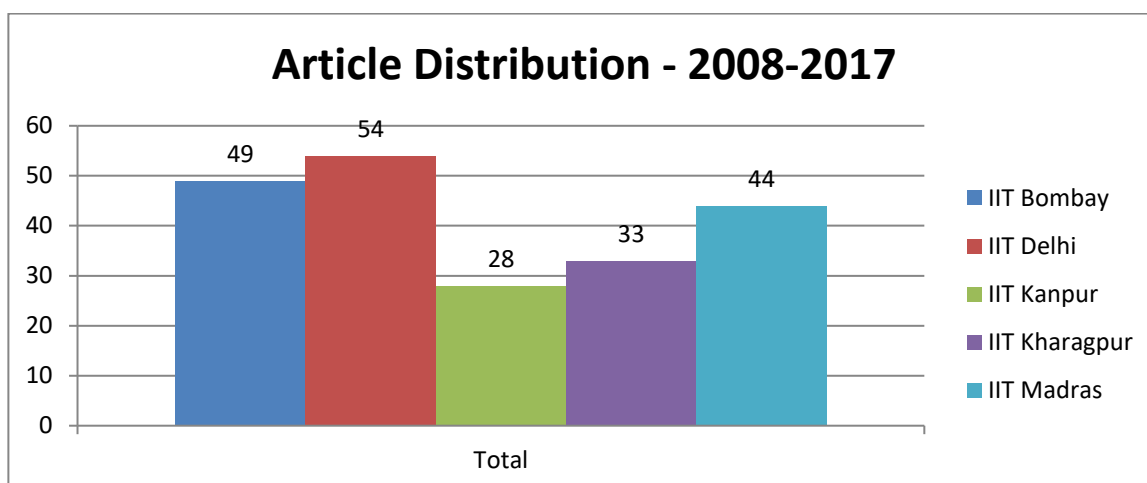
The study considered only the top 5 institutes NIRF ranking fall in the engineering category in the year 2017. Altmetrics data collected on dated 27-01-2018 from PLOS (Public Library of Science) database using affiliation search of all five IITs. There were 208 documents retrieved from the database. It was analyzed by using MS-excel.

Results and Discussion:-

1) Year wise Distribution of Article by TOP NIRF 2017 Engineering:-

Figure 1 illustrates the distribution of publications of the top 5 NIRF-2017 engineering institutes between 2008 and 2017 in the POLS database. IIT Delhi was most productive in terms of producing 54 articles, followed by IIT Bombay 49 papers, IIT Madras 44 papers, IIT Kharagpur 33 papers, and IIT Kanpur 28 papers. From this given data, it noted that the highest number of publications found from IIT Delhi, whereas the lowest publications found from IIT Kanpur 28 publications.

Figure 1: Distribution of Article from 2017 to 2017



2) Top Five View article:-

Table 1 shows the top five view articles of five IIT's published in PLOS journals. The data calculated by adding both views and download statistics of PLOS journals and Pub Med Central. The data were sorted by the highest number of views count from PLOS journals and Pub Med Central database. The paper title "Membrane Vesicles of Group B Streptococcus Disrupt Feto-Maternal Barrier Leading to Preterm Birth" published in 2017 from IIT Bombay, attracted the highest no. of view that is 17108. This paper also recorded that the total view in the PLOS journal is 14,889 out of 16524, and the view in PMC is 410 out of 584. It consists of PLOS Pdf articles 1621, XML downloaded 14, PMC PDF 174. Paper title "Congenital Malformations among Babies Born Following Letrozole or Clomiphene for Infertility Treatment," published by IIT Kharagpur, recorded the second-highest numbers of view that is 13,036. It also noted that the total view in the PLOS journal is 9212, PDF downloaded are 576, XML downloaded are 32 out of 9820, and the total view in PMC is 2606, PMC downloaded are 610 out of 3216.

Table 1: Top Five View article

SL No	Organization	Title	Authors	PLOS Total	PLOS views	PLOS PDF downloads	PLOS XML downloads	PMC Total	PMC views	PMC PDF Downloads	Total
1	IIT Bombay	Membrane Vesicles of Group B Streptococcus Disrupt Feto-Maternal Barrier Leading to Preterm Birth	Manalee Vishnu Surve, Anjali Anil, Kshama Ganesh Kamath, SmitaBhutada, Lakshmi KavithaSthanam, Arpan Pradhan, Rohit Srivastava, Bhakti	16524	14889	1621	14	584	410	174	17108

			Basu, Suryendu Dutta, Shamik Sen, Deepak Modi, Anirban Banerjee								
2	IIT Kharag pur	Congenital Malformation s among Babies Born Following Letrozole or Clomiphene for Infertility Treatment	Sunita Sharma, Sanghamitr a Ghosh, Soma Singh, AsthaChak ravarty, Ashalatha Ganesh, Shweta Rajani, B. N. Chakravart y	9820	9212	576	32	3216	2606	610	1303 6
3	IIT Delhi	A Phenomenolo gical Model for Predicting Melting Temperatures of DNA Sequences	GarimaKha ndelwal, JayaramBh yравabhotl a	10351	9104	1187	60	1832	1574	258	1218 3
4	IIT Kharag pur	Skin Equivalent Tissue- Engineered Construct: Co-Cultured Fibroblasts/ Keratinocytes on 3D Matrices of Sericin Hope Cocoons	SunitaNaya k, Sancharika Dey, Subhas C. Kundu	9188	7547	1594	47	1711	1127	584	1089 9
5	IIT Bombay	Prediction by Promoter Logic in Bacterial Quorum Sensing	Navneet Rai, RajatAnan d, Krishna Ramkumar, Varun Sreenivasa n, SugatDabh olkar, K. V. Venkatesh, MukundTh attai	9732	8447	1216	69	1013	699	314	1074 5

3) Top Five Saved Paper:-

Table 2 shows the top five saved paper as retrieved from the POLS database. Social bookmark sites and Reference managers used to store or save the documents for review, recommended, and shared with other people and groups. The publication titled "Highly Conductive Aromatic Functionalized Multi-Walled Carbon Nanotube for Inkjet Printable High-Performance Supercapacitor Electrodes" from IIT Kanpur is highly saved paper among the top five institutes. The researchers extensively save this paper by using the Figshare repository are 959 out of 974.

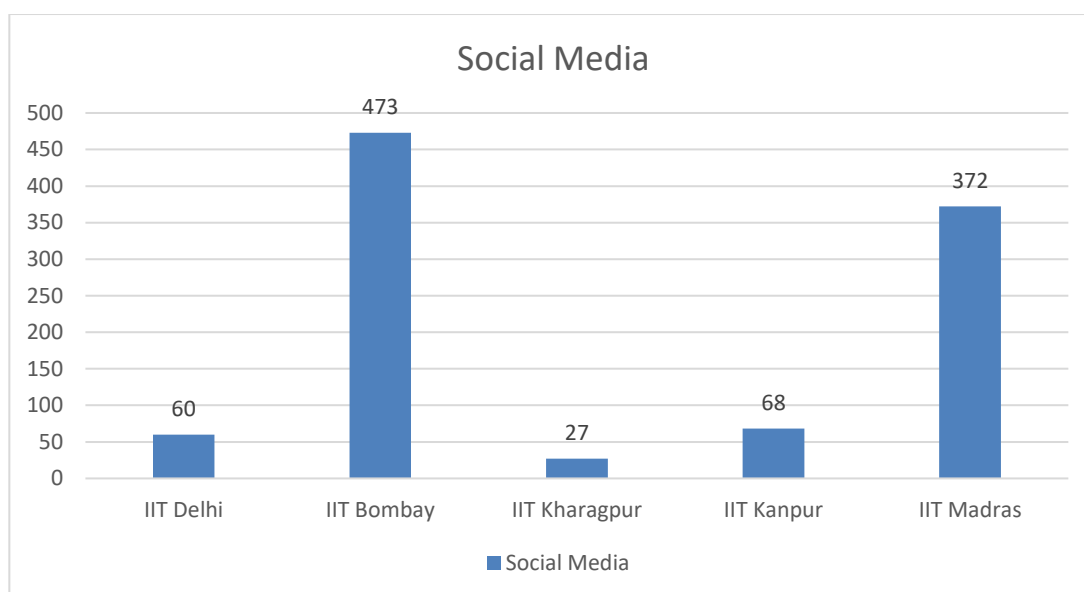
Table 2: Top Five Saved Paper

SL No	Organization	Title	Authors	CiteULike	Mendeley	Figshare	Total
1	IIT Kanpur	Highly Conductive Aromatic Functionalized Multi-Walled Carbon Nanotube for Inkjet Printable High Performance Supercapacitor Electrodes	Sanjeev K. Ujjain, Rohit Bhatia, Preety Ahuja, Pankaj Attri	0	15	959	974
2	IIT Kharagpur	Bacterial Fucose-Rich Polysaccharide Stabilizes MAPK-Mediated Nrf2/Keap1 Signaling by Directly Scavenging Reactive Oxygen Species during Hydrogen Peroxide-Induced Apoptosis of Human Lung Fibroblast Cells	Sougata Roy Chowdhury, SumanSengupta, Subir Biswas, Tridib Kumar Sinha, Ramkrishna Sen, Ratan Kumar Basak, BasudamAdhikari, Arindam Bhattacharyya	0	9	813	822
3	IIT Kharagpur	Osteochondral Tissue Engineering In Vivo: A Comparative Study Using Layered Silk Fibroin Scaffolds from Mulberry and Nonmulberry Silkworms	SushmitaSaha, BananiKundu, Jennifer Kirkham, David Wood, Subhas C. Kundu, Xuebin B. Yang	0	49	735	784
4	IIT Madras	Astaxanthin Inhibits JAK/STAT-3 Signaling to Abrogate Cell Proliferation, Invasion and Angiogenesis in a Hamster Model of Oral Cancer	J. Kowshik, Abdul Basit Baba, Hemant Giri, G. Deepak Reddy, Madhulika Dixit, SiddavaramNagini	0	25	706	731
5	IIT Kanpur	Monosaccharide-Responsive Phenylboronate-Polyol Cell Scaffolds for Cell Sheet and Tissue Engineering Applications	RachamallaMaheedhar Reddy, Akshay Srivastava, Ashok Kumar	0	14	613	627

4) Articles Shared on Social Media:-

Figure 2 shows the number of articles shared on various social media platforms like Twitter, Facebook, and Wikipedia, etc. of five institutes. It is clear that the papers published by IIT Bombay have more significant social media attention (473), whereas; the papers published by IIT Kharagpur have lower social media attention. Similarly, the papers published IIT Madras got second positions, and their publications shared 372 times on different social media platforms, followed by IIT Kanpur 68 times, IIT Delhi 60 times. It can be said that the papers published by IIT Bombay and IIT Madras had a more significant impact on social media and popularity among the audience.

Figure 2: Articles shared on Social Media Platform



5) Top Five Cited Paper:-

PLOS database also gives traditional citation data from a different source such as Scopus, Data Cite, Web of Science, etc. motioned in the below table. Table 3 records the top-cited paper, which was published by the TOP 5 NIRF-2017 institutes (Engineering) as per NIRF ranking 2017. Paper titled "Diversity, Metabolic Properties and Arsenic Mobilization Potential of Indigenous Bacteria in Arsenic Contaminated Groundwater of West Bengal, India," published in 2017 from IIT Kharagpur gets the maximum numbers of citations 97 were 78 (PMC Europe Database Citations) and 19 citations (Scopus). It is cleared from the table that every two papers from IIT Kharagpur and IIT Bombay and one paper found from IIT Delhi in the top 5 five cited papers list. However, no papers listed published IIT Kanpur, IIT Madras.

Table 3: Top Five Cited Paper

S L N o	Organizati on	Title	Authors	CrossRef	Scopus	PubMed Central	DataCite	PMC Europe Citations	PMC Europe Databas e Citations	Web of Science	Total
1	IIT Kharagpur	Diversity, Metabolic Properties and Arsenic Mobilization Potential of Indigenous Bacteria in Arsenic Contaminated Groundwater of West Bengal, India	Dhiraj Paul, Sufia K. Kazy, Ashok K. Gupta, Taraknath Pal, PinakiSar	0	19	0	0	0	78	0	97
2	IIT Bombay	Islet-Like Cell Aggregates Generated from Human Adipose Tissue Derived Stem Cells Ameliorate Experimental Diabetes in Mice	Vikash Chandra, Swetha G, SudhakarMuthyala, Amit K. Jaiswal, Jayesh R. Bellare, Prabha D. Nair, Ramesh R. Bhonde	0	57	2	0	36	0	0	95
3	IIT Kharagpur	BRCA1 and BRCA2 Missense Variants of High and Low Clinical Significance Influence Lymphoblastoid Cell Line	Nic Waddell, Anette Ten Haaf, Anna Marsh, Julie Johnson, Logan C. Walker, kConFab	0	8	0	0	6	71	0	85

		Post-Irradiation Gene Expression	Investigators, Milena Gongora, Melissa Brown, Piyush Grover, Mark Girolami, Sean Grimmond, Georgia Chenevix-Trench, Amanda B. Spurdle								
4	IIT Delhi	Mycobacterium tuberculosis Transcriptional Adaptation, Growth Arrest and Dormancy Phenotype Development Is Triggered by Vitamin C	NeetuKumraTaneja, SakshiDhingra, Aditya Mittal, MohitNaresh, Jaya SivaswamiTyagi	0	58	0	0	27	0	0	85
5	IIT Bombay	Integration of Global Signaling Pathways, cAMP-PKA, MAPK and TOR in the Regulation of FLO11	P. K. Vinod, NeelanjanSengupta, P. J. Bhat, K. V. Venkatesh	0	38	0	0	26	15	0	79

6) Top Five Authors:-

Table 4 shows the top 5 contributing authors and their respective affiliations. Dulal Panda contributed the highest no. of papers with 6 publications as per the recorded in POLS database, followed by Jayesh Bellare, Ranjith Padinhateeri, and V. Srinivasa Chakravarthy with 5 contributions each and Mandar M. Inamdar contributed four papers.

Table 4: Top Five Authors

SL No	Authors	No. of Paper	Affiliation
1	Dulal, Panda	6	Department of Biosciences and Bioengineering, Indian Institute of Technology Bombay, Mumbai, Maharashtra, India
2	JayeshBellare	5	Department of Chemical Engineering, Indian Institute of Technology-Bombay, Powai, Mumbai, Maharashtra, India
3	RanjithPadinhateeri	5	Department of Biosciences and Bioengineering, Indian Institute of Technology Bombay, Mumbai, India
4	V. SrinivasaChakravarthy	5	Department of Biotechnology, Indian Institute of Technology, Madras, Chennai, India
5	Mandar M. Inamdar	4	Department of Civil Engineering, Indian Institute of Technology Bombay, Mumbai, India

7) Discussed paper on social media:-

Traditionally believe that discussion of papers on the different social platform because of their popularity. Table 5 provides a list of social networking sites with several times shares/discuss on the different social media platforms. Social media and social bookmarking sites play an essential role in the field of Altemetrics. Some social networks have meant for academics and research purposes. This social network provides creations of online groups for discussion based on the particular research interest. Paper titled "Exploring the Origin of Differential Binding Affinities of Human Tubulin Isotypes $\hat{I}+\hat{I}^2$ II, $\hat{I}+\hat{I}^2$ III and $\hat{I}+\hat{I}^2$ IV for DAMA-Colchicine Using Homology Modelling, Molecular Docking and Molecular Dynamics Simulations" published from IIT Bombay gets the highest numbers of times discussed that is 134 times, discussed in which 132 times shared/ discussed on Facebook and 2 times on Wikipedia. Paper titled "Indian Summer Monsoon Rainfall: Implications of Contrasting Trends in the Spatial Variability of Means and Extremes" was the second position where 121 times (9 times on Twitter and 112 times on

Facebook). The above data recorded that Facebook is one of the essential social network platforms where maximum numbers of times shared papers published by the top 5 NIRF Institutes (Engineering).

Table 5: Discussed paper on social media

S L No	Organization	Title	Authors	Twitter	Facebook	Wikipedia	Research Blogging	Nature Blogs	Science Seeker	Reddit	Wordpress.com	Total
1	IIT Bombay	Exploring the Origin of Differential Binding Affinities of Human Tubulin Isoforms I ₁ , I ₂ , I ₃ and I ₄ for DAMA-Colchicine Using Homology Modelling, Molecular Docking and Molecular Dynamics Simulations	Bajarang Vasant Kumbhar, Anubhaw Borogaon, Dulal Panda, Ambarish Kunwar	0	132	2	0	0	0	0	0	134
2	IIT Bombay and IIT Madras	Indian Summer Monsoon Rainfall: Implications of Contrasting Trends in the Spatial Variability of Means and Extremes	Subimal Ghosh, H. Vittal, Tarul Sharma, Subhankar Karmakar, K. S. Kasiviswanathan, Y. Dhanesh, K. P. Sudheer, S. S. Gunthe	9	112	0	0	0	0	0	0	121
3	IIT Madras	Identifying the Basal Ganglia Network Model Markers for Medication-Induced Impulsivity in Parkinson's Disease Patients	Pragathi Priyadharsini Balasubramani, V. Srinivasa Chakravarthy, Manal Ali, Balaraman Ravindran, Ahmed A. Moustafa	0	118	0	0	0	0	0	0	118
4	IIT Bombay	Statistical Mechanics Provides Novel Insights into Microtubule Stability and Mechanism of Shrinkage	Ishutesh Jain, Mandar M. Inamdar, Ranjith Padinhateeri	0	67	1	0	0	0	0	0	68
5	IIT Madras	The Usefulness and Feasibility of Mobile Interface in Tuberculosis Notification (MITUN) Voice Based System for Notification of Tuberculosis by Private Medical Practitioners – A Pilot Project	Banurekha Velayutham, Beena Thomas, Dina Nair, Kannan Thiruvengadam, Suma Prashant, Sathyapriya Kittusami, Harivanzan Vijayakumar, Meenachi Chidambaram, Shri Vijay Bala Yogendra Shivakumar, Lavanya Jayabal, Ashok Jhunjhunwala, Soumya Swaminathan	11	29	0	0	0	0	0	0	40

Discussion and Conclusion: -

Social media plays a significant role in Altmetrics for discussion, prediction, and recommendations. It provides rapid feedback on scientific publications through social networking sites. Also, border discussion on the published articles. However, traditional citation takes time to get citation as motioned earlier. PLOS free is a free database, which collects citation metrics from different citation databases, and shows the correlations among them. It is also collecting the large variety of metrics about the articles such as Usages Statistics, Social Share and Academic Bookmarks, etc.. Altmetrics is a new area of research, and PLOS gives Altmetrics data with free of cost. This data can use for research work. This study set out to investigate how effectively the scientific research was shared, discuss, save, and views using on the different social media platforms. The findings indicate that papers published by IIT Bombay had a more significant impact on the social media platform. Furthermore, Dulal Panda published the highest 6 number articles among all five IITs indexed in the PLOS database. Similarly, IIT Delhi published 54 papers between 2008 and 2017.

Reference:-

1. Adie, E., & Roe, W. (2013). Altmetric: Enriching scholarly content with article-level discussion and metrics. *Learned Publishing*, 26(1), 11–17. <https://doi.org/10.1087/20130103>
2. Akers, K. G. (2007). Library Association Examination. *The Library*, s1-8(1), 231-a-231. <https://doi.org/10.1093/library/s1-8.1.231-a>
3. Araújo, R., Sorensen, A. A., Konkiel, S., & Bloem, B. R. (2017). Top Altmetric Scores in the Parkinson's Disease Literature. *Journal of Parkinson's Disease*, 7(1), 81–87. <https://doi.org/10.3233/JPD-179000>
4. Bornmann, L., & Haunschild, R. (2018). Do altmetrics correlate with the quality of papers? A large-scale empirical study based on F1000Prime data. *PLoS ONE*, 13(5), 1–12. <https://doi.org/10.1371/journal.pone.0197133>
5. Chavda, J., & Patel, A. (2016). Measuring research impact: bibliometrics, social media, altmetrics, and the BJGP. *British Journal of General Practice*, 66(642), e59–e61. <https://doi.org/10.3399/bjgp16x683353>
6. Collister, L. B., Kirschner, J., Bradbury, M., Deliyannides, T. S., & Kear, R. (2017). Altmetrics and Library Publishing. In *IFLA WLIC 2017* (pp. 1–7).
7. Dhiman, A. K. (2015). Bibliometrics to altmetrics: Changing trends in assessing research impact. *DESIDOC Journal of Library and Information Technology*, 35(4), 310–315.
8. Gordon, G., Lin, J., Cave, R., & Dandrea, R. (2015). The question of data integrity in article-level metrics. *PLoS Biology*, 13(8), 1–9. <https://doi.org/10.1371/journal.pbio.1002161>
9. Hulser, R. P. (2016). Altmetrics: social media metrics tools expanding the librarian's role. Retrieved from <https://webcast.gigtv.com.au/Mediasite/Play/095fdaa53fc24ac0b2ca2061207833b01d?catalog=4234d992-2f59-4e6e-8d83-c18625ac060b>
10. Katavi, V. (2014). Research integrity corner. *Applied Clinical Trials*, 24(2), 217–222. <https://doi.org/10.1038/373010c0>
11. Kelly, E. J. (2017). Altmetrics and archives. *Journal of Contemporary Archival Studies*, 4(1). Retrieved from <http://elischolar.library.yale.edu/jcas/vol4/iss1/1>
12. Kousha, K., & Thelwall, M. (2019). Can Google Scholar and Mendeley help to assess the scholarly impacts of dissertations? *Journal of Informetrics*, 1–30.
13. Lin, J., & Fenner, M. (n.d.). The Many Faces of Article-Level Metrics, 27–30.
14. Patthi, B., Prasad, M., Gupta, R., Singla, A., Kumar, J. K., Dhama, K., ... Niraj, L. K. (2017). Altmetrics – A collated adjunct beyond citations for scholarly impact: A systematic review. *Journal of Clinical and Diagnostic Research*, 11(6), ZE16–ZE20. <https://doi.org/10.7860/JCDR/2017/26153.10078>
15. Pradhan, P., & Dora, M. (2015). Altmetrics: An Alternative View-Point to Assess Scholarly Research Impact. *International Journal of Information Dissemination and Technology (IJIDT)*, 5(2), 123–130. https://doi.org/https://www.researchgate.net/profile/Pallab_Pradhan2/publication/280712176_Altmetrics_An_Alternative_View-Point_to_Assess_Scholarly_Research_Impact/links/55c1e26108aeb5e0c5843f5c/Altmetrics-An-Alternative-View-Point-to-Assess-Scholarly-Research-Impact.pdf
16. Priem, J., Groth, P., & Taraborelli, D. (2012). The Altmetrics Collection. *PLoS ONE*, 7(11), e48753. <https://doi.org/10.1371/journal.pone.0048753>
17. Thelwall m.thelwall@wlv.ac.uk, M., & Nevill T.Nevill@wlv.ac.uk, T. (2018). Could scientists use Altmetric.com scores to predict longer term citation counts? *Journal of Informetrics*, 12(1), 237–248. Retrieved from

<http://10.0.3.248/j.joi.2018.01.008%0Ahttp://search.ebscohost.com/login.aspx?direct=true&db=llf&AN=128275248&site=ehost-live>

18. Thelwall, M. (2018). Does Female-authored Research have More Educational Impact than Male-authored Research? Evidence from Mendeley. *Journal of Altmetrics*, 1(1), 1–8. <https://doi.org/10.29024/joa.2>
19. Thelwall, M. (2018). Early Mendeley readers correlate with later citation counts. *Scientometrics*, 115(3), 1231–1240. <https://doi.org/10.1007/s11192-018-2715-9>
20. Thelwall, M., Haustein, S., Larivière, V., & Sugimoto, C. R. (2013). Do Altmetrics Work? Twitter and Ten Other Social Web Services. *PLoS ONE*, 8(5), e64841. <https://doi.org/10.1371/journal.pone.0064841>