

# Altmetric Mapping of Highly-Cited Articles on Plagiarism in India

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## ABSTRACT

The study aims to explore the online attention received by the top twenty highly cited publications on plagiarism published between 2011 to 2020 from India by using the observation method. The bibliographical data were collected from SCOPUS database and the altmetric data were collected by using the altmetric harvesting tools AltmetricIt and PlumX. The study's findings show that the citation count and the Altmetric Attention Score of the top twenty highly cited publications on plagiarism published between 2011 to 2020 from India are much lower than those from other countries. The Spearman correlation analysis of the citation count and AAS shows that they are not correlated. The study hopes that in the future, the publications to be published from India on important subjects such as plagiarism will have a more significant online impact on the research community and will help the authors and the publishers to understand the current status of the popularity of their research publications and the impact they have made on the research community.

## KEYWORDS

Altmetric Attention Score, AltmetricIt, Altmetrics, Plagiarism, India, Social Media

## INTRODUCTION

The growth of the number of journals and the need for research output for academic promotion and completion has added to the rapid increase in the size and frequency of publication of scholarly content. The chances of plagiarism, whether knowingly or unknowingly, have also increased, which is a matter of significant concern in the research fraternity. Plagiarism has been a menace to scientific or intellectual work in various forms. Although several laws and organizations have been introduced to tackle this issue, it is still one of the problems making the scientific community suffers as it leads to the retraction of published works or banning the researchers from publishing. This happens because many times the authors do not abide by the guidelines or have very less idea of plagiarism. "Many people think of plagiarism as copying another's work or borrowing someone else's original ideas, but terms like 'copying' and 'borrowing' can disguise the seriousness of the offence. According to Merriam-Webster online dictionary 'Plagiarism' is defined as the theft and use of other people's

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ideas or words as their own, use of sources without attribution, literary theft, or presenting some ideas as own and as it is new, while this idea already exists in other sources. It is an act of fraud as it involves both stealing someone else's work and lying about it afterward."(*What Is Plagiarism?*, 2017). "Plagiarism has been traditionally defined as the taking of words, images, processes, structure, and design elements, ideas, etc. of others and presenting them as one's own. It is often associated with phrases such as the kidnapping of words, kidnapping of ideas, fraud, and literary theft."(Roig, 2003, p. 3). Gu and Brooks (2008) "tried to explore the complexity of the notion of Plagiarism from socio-cultural and psychological perspectives and suggest that learning to write in an unfamiliar academic discourse requires, at the deepest level, the students' cultural appropriation of their conceptual understanding of the way of writing and the meaning of using the literature to develop their written argumentation". Garner (2011) "discussed about various commercial and free plagiarism detection tool that helps in combating unethical publications by detecting Plagiarism". "Several library web sites are devoted to solution of the issues pertaining to Plagiarism by comparing them against each other in intended audience and approach in each site." (Maxymuk, 2006). Penders (2018) "discussed the moral status of an act of research misconduct and explained that from a positivist view, plagiarism affects trust in science but not the content of the scientific corpus, whereas from a constructivist point of view both are at stake."

"There is a rising trend in social media activity measured by the frequency of contributions and the number of people involved. It is becoming increasingly important to use social media platforms to proactively draw attention to research, that is, advertise it."(Tunger et al., 2018). Altmetrics is a type of metric that is used to quantify online attention received by a publication on various academic and non-academic social networking sites and other platforms such as Blogs, Media channels, and newspapers, Patents, etc., by studying how many times an article has been tweeted, viewed, mentioned, commented on, shared, cited in Wikipedia, blogged about, and so on. "Altmetrics are collected and analyzed for various purposes ranging from early impact assessment to measuring correlations between altmetrics and citations." (Priem et al. 2011). "Altmetrics has become a popular metric because of its potential advantages as it offers a more nuanced understanding of impact, showing us which scholarly products are read, discussed, saved, and recommended as well as cited, gathering the evidence of impact in days instead of years."(Piwowar, 2013). "Altmetrics track the life of each paper after it has been published and better understand how it is read and used."(Crotty, 2014). "Altmetrics normally are early available and allow to assess the social impact of scholarly outputs, almost at real-time."(Melero, 2015). Altmetric study provides an alternative way in addition to the conventional scientific metric, for measuring the impact of scholarly research outputs on the social web in the form of the Altmetric Attention Score (AAS). "The AAS represents a weighted count of the amount of attention for research output from various sources."(Elmore, 2018).

A large number of research publications in the form of articles, blog posts, slideshows, etc., have been published by Indian authors to explain the concept and address the issues of plagiarism. To control this menace on research writings and publications, many documents are published every year by Indian authors. The online impact of these publications on the scholarly world is not known. No altmetric research of the articles on Plagiarism that have been published from India was found; hence we are unaware of the impact and the online attention these articles have received. However, the online attention they have received in the scholar community still needs to be discovered. The present study used altmetric measurement tools to map the online impact of the twenty highly cited publications on Plagiarism by studying the online attention received by the articles on various academic and non-academic social media platforms. The study was limited to the publications published between 2011 to 2020 as the altmetric data of most of the highly cited articles before the year 2011 was not available. Also, only the top twenty highly cited publications were considered because the rest of the publications have either very low citation score or does not have any altmetric data.

## REVIEW OF RELATED LITERATURE

Anderson & Steneck (2011) “described plagiarism as a form of research misconduct and a serious violation of the norms of science and how it happens knowingly or unknowingly in research publications. They also mentioned the various approaches the U.S. Federal Government took to avert such misconduct in future research publications”. Biagioli (2014) “compared plagiarism with slavery and explained how it violates the kinship between authors, their works, and the readers. He explained that authors who do plagiarism, which is theft of others’ work, are similar to the persons who were involved in the kidnapping and slavery of children in the earlier period.” Helgesson & Eriksson (2014) “explain the concept of plagiarism and discuss plagiarism normatively about research and discussed many circumstances that make Plagiarism more or less grave and the plagiariser more or less blameworthy”. “Any reasons should not be accepted if the plagiarism is caused by the author, not the journal or the publisher; added that any degree of Plagiarism is unethical and stated that regardless of the status of the plagiarist, punishment for the detected plagiarism is usually needed.” (Joob & Wiwanitkit, 2018). “The level of awareness regarding plagiarism and the impact of plagiarism detection software is generally high among the researchers. Their strong statistical evidence suggests that awareness about plagiarism and anti-plagiarism software has significantly impacted the researchers’ actions towards preventing plagiarism.”(Mostofa *et al.* 2021). “Excessive ‘borrowing’ from others’ work as well as from their own previously published papers is one of the main reasons for plagiarism and self-plagiarism.” (Roig, 2010). Akella et al., (2021) “emphasized the importance of an efficient way of identifying important scholarly works early and used altmetrics to predict citations a scholarly work could receive in the short term. They found that in predicting early citations, Mendeley’s readership is the most important factor followed by others such as followers on Twitter, the academic status of the readers, mentions on social platforms, etc.” Alperin (2013) “emphasized the potential that altmetrics can do for the journals from developing countries which are generally overshadowed by journals published from developed countries and clearly explained that it would help create research communities by gathering the lesser-known researcher community with social media. Also, altmetrics will play an important role in promoting scholarly literature by changing the existing way of research evaluation”. Barnes(2015) “describes the usability of altmetric as a research impact assessing tool and tries to find evidence for the claim that it measures the research impact within days of publication rather than years and concluded that it is not a feasible tool for predicting the performance of a research article in terms of future citations”. Costas(2017) “explained the present status of social media metrics and envisioned the future it holds”. He explained that the “continuous increase in the number of social media users has accounted for the increased use of social media platforms for scholarly communication, thereby increasing the relevancy of social media metrics in the near future”. Nan et al., (2020) “found that the correlation between citation and altmetric indicators is quite inconsistent, depicting a different aspect of the impact of the books according to discipline and year of publication. The study also found that books published recently have higher altmetric impact scores than the older ones.”

## OBJECTIVES OF THE STUDY

The objectives of the study are:

- To find the top twenty highly cited publications on plagiarism by Indian authors published in Scopus abstract and citation database during 2011–2020.
- To study the authorship pattern, year-wise publications, document type, and type of access of the top twenty highly cited publications on plagiarism.
- To study the altmetric attention score of the top twenty highly cited publications in the Scopus abstract and citation database during the study period.

- To study the geographical distribution of the users contributing to the altmetric attention score of the studied articles.
- To study readers' professional status and demography of the top twenty highly cited publications, according to Mendeley.
- To find if the citation and altmetric attention score of the publications have any co-relation.

## **METHODOLOGY**

For collecting the bibliographical data of the top twenty highly-cited publications on plagiarism published between 2011 and 2020 by Indian authors, the SCOPUS abstract and citation database (<https://SCOPUS-du.refread.com/search/form.uri?display=basic#basic>) was accessed in the Google Chrome web browser using the remote access facility provided by the E-library of University of Delhi (<https://duelibrary.in/#/home>). The publications on plagiarism were searched on the SCOPUS homepage using the word 'plagiarism'. The year of publication was limited from 2011 to 2020, and the geographical origin was determined to be 'India'. The publications shown were then sorted by using the 'Cited by (highest)' option to get the desired sample. The altmetric data of the top twenty highly cited publications were collected with the help of the altmetric tool, AltmetricIt, provided by Altmetric.com, to find out the Altmetric Attention Score of the articles and on which social media platform they are getting the most attention. The data of the number of readers in various academic platforms such as Mendeley, CiteULike, and Connotea and their geographical location were also collected using AltmetricIt. PlumX metrics provided by Plum Analytics were used to study demography, i.e., the discipline and profession of the readers. The data was collected on 7th September 2022 and cross-checked again on 7th October 2022 to find any discrepancies.

For finding the results, different logical analytical and statistical techniques are systematically applied during data analysis for the illustration, condensation, and presentation of the data. MS-Excel 2007 tabulated the data collected from the SCOPUS abstract and citation database and presented graphs for analysis and interpretation. IBM SPSS Statistics v.21.0 was used for conducting the Spearman correlation analysis. The data from the highly cited twenty publications were presented in tables using descriptive statistics.

## **DATA ANALYSIS**

Many articles on plagiarism published by Indian authors are indexed in the SCOPUS database. The bibliographical data of the top twenty highly-cited publications on plagiarism were collected as mentioned in the methodology section. Further, the information was accessed and exported from the SCOPUS abstract and citation database presented in tables.

A total of 417 publications published on plagiarism from 2011 to 2020 by Indian authors were found in the SCOPUS abstract and citation database. Out of the 417 publications, the top twenty having the highest citations were extracted. Table 1 represents the data of the top twenty highly cited publications on plagiarism published in the year 2011-2020 by Indian authors extracted from the SCOPUS abstract and citation database.

Table 1 shows that out of the top twenty publications, the research article 'Information and misinformation on COVID-19: A cross-sectional survey study' having free access, published in the year 2020 in the 'Journal of Korean Medical Science' and co-authored by six authors, the highest citation of 67. The journal article 'Creating Collaborative and Convenient Learning Environment Using Cloud-Based Moodle LMS: An Instructor and Administrator Perspective', authored by Kumar & Sharma, published in 'The International Journal of Web-Based Learning and Teaching Technologies' in the year 2016 having restricted access, has a total citation number of 18 which is the lowest among the top twenty cited publications as shown in Table 1. It also indicates that Vani and Gupta have the maximum number of publications (six) among the top twenty highly cited publications.

Table 1.

**Bibliographical Data of the top-cited 20 publications on plagiarism published in the year 2011-2020 by Indian authors extracted from the SCOPUS database**

Sl No.	Title	Authors	Year	Source Title	Cited by	Document Type	Types of Access
1	Information and misinformation on COVID-19: A cross-sectional survey study.	Gupta L., Gasparyan A.Y., Misra D.P., Agarwal V., Zimba O., Yessirkepov M.	2020	Journal of Korean Medical Science	67	Research Article	Open Access
2	A deep network model for paraphrase detection in short text messages	Agarwal B., Ramampiaro H., Langseth H., Ruocco M.	2018	Information Processing and Management	58	Research Article	Open Access
3	A survey on Authorship Profiling techniques	Raghunadha Reddy T., Vishnu Vardhan B., Vijayapal Reddy P.	2016	International Journal of Applied Engineering Research	33	Research Article	Closed Access
4	Plagiarism detection in text using vector space model	Ekbal A., Saha S., Choudhary G.	2012	Proceedings of the 2012 12th International Conference on Hybrid Intelligent Systems, HIS 2012.	29	Conference Paper	Closed Access
5	Detection of idea plagiarism using syntax–Semantic concept extractions with genetic algorithm	Vani K., Gupta D.	2017	Expert Systems with Applications	28	Research Article	Closed Access
6	Using K-means cluster-based techniques in external plagiarism detection.	Vani K., Gupta D.	2014	Proceedings of 2014 International Conference on Contemporary Computing and Informatics, IC3I 2014	27	Conference Paper	Closed Access
7	Study on extrinsic text plagiarism detection techniques and tools	Vani K., Gupta D.	2016	Journal of Engineering Science and Technology Review	26	Research Article	Open Access
8	Unmasking text plagiarism using syntactic-semantic based natural language processing techniques: Comparisons, analysis, and challenges.	Vani K., Gupta D.	2018	Information Processing and Management	25	Research Article	Closed Access
9	Publication misconduct among medical professionals in India.	Dhingra D., Mishra D.	2014	Indian journal of medical ethics.	24	Research Article	Closed Access
10	The integrity of clinical research conduct, reporting, publishing, and post-publication promotion in rheumatology	Misra D.P., Agarwal V.	2020	Clinical Rheumatology	23	Review	Closed Access
11	Plagiarism: A silent epidemic in scientific writing – Reasons, recognition and remedies.	Debnath J.	2016	Medical Journal Armed Forces India	21	Review	Open Access
12	An improved SRL-based plagiarism detection technique using Sentence ranking	Paul M., Jamal S.	2015	Procedia Computer Science	21	Conference Paper	Open Access
13	Plagiarism: An egregious form of misconduct.	Juyal D., Thawani V., Thaledi S.	2015	North American Journal of Medical Sciences	21	Research Article	Open Access
14	Ethics in writing: Learning to stay away from Plagiarism and scientific misconduct.	Sharma B.B., Singh V.	2011	Lung India	21	Research Article	Open Access
15	Plagiarism and academic misconduct: A systematic review.	Awasthi S.	2019	DESIDOC Journal of Library and Information Technology	20	Review	Open Access

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**Table 1.**  
**Continued**

SI No.	Title	Authors	Year	Source Title	Cited by	Document Type	Types of Access
16	Using Natural Language Processing techniques and fuzzy-semantic similarity for automatic external plagiarism detection.	Gupta D., Vani K., Singh C.K.	2014	Proceedings of the 2014 International Conference on Advances in Computing, Communications and Informatics, ICACCI 2014	20	Conference Paper	Closed Access
17	Knowledge and attitude of dental professionals of North India toward Plagiarism	Singh H.P., Guram N.	2014	North American Journal of Medical Sciences	20	Research Article	Open Access
18	Matching handwritten document images.	Krishnan P., Jawahar C.V.	2016	Lecture Notes in Computer Science	19	Conference Paper	Open Access
19	Investigating the impact of combined similarity metrics and POS tagging in extrinsic text plagiarism detection system.	Vani K., Gupta D.	2015	2015 International Conference on Advances in Computing, Communications and Informatics, ICACCI 2015.	19	Conference Paper	Closed Access
20	Creating Collaborative and Convenient Learning Environment Using Cloud-Based Moodle LMS: An Instructor and Administrator Perspective	Kumar V., Sharma D.	2016	International Journal of Web-Based Learning and Teaching Technologies	18	Research Article	Closed Access

### Authorship Pattern

The research works published in different journals or books are written by a single author or multiple authors. Table 2 shows the authorship pattern of the 20 publications as tabulated in Table 1.

Table 2 shows that out of the 20 publications, the highest number of publications (twelve) are co-authored by two authors. Three authors co-authored four articles; two were single-authored, and four or more scholars co-authored the remaining two.

### Year-Wise Publication

The number of publications in a topic or discipline published in a respective year is the Year-wise publication of the articles in that particular topic or field.

Table 3 represents the number of publications published according to the year from 2011 to 2020, the top twenty publications.

**Table 2.**  
**Authorship pattern of the highly cited top 20 publications (n=20)**

Sl. No.	Number of Authors	No. of publications	Percentage
1	Two Authors	12	60
2	Three Authors	04	20
3	One Author	02	10
4	Four or more Authors	02	10
	<b>Total</b>	<b>20</b>	<b>100</b>

Table 3 shows that among the top twenty highly cited publications, the maximum number of publications (five) was published in the year 2016, followed by 2014 (four) and 2013 (three). Two articles each were published in the years 2018 and 2020. Only one article was published in 2011, 2012, 2017, and 2019. Interestingly, no paper was published in 2013 in the list of the highly cited top twenty publications on Plagiarism by Indian authors.

### Type of Documents

The manuscripts that are published in the journals are broadly divided into different types, “such as research articles, reviews, method articles, case studies, study protocols, software tool articles, research notes, data notes, opinion articles, correspondence, editorials, and registered reports, etc.”(*Emerald Open Research*). The papers presented at academic conferences are termed conference papers.

From the data of the top twenty highly cited publications on Plagiarism published by Indian authors from 2011 to 2020, the documents can be divided into research articles, Reviews, and Conference papers. Table 4 depicts the document type of the highly cited 20 publications.

Table 4 shows that out of the highly cited 20 publications, 11 are research articles which is the highest. Another six publications are conference papers, and the remaining three are reviews.

### Types of Access

After the submitted manuscripts are published in the journals, some authors and publishers prefer to put them in the public domain so that their research can have a broader impact and can be accessed

**Table 3.**  
Year-wise publications of highly cited top 20 articles (n=20)

S. No.	Year of Publication	No. of publications	Percentage
1	2011	01	05
2	2012	01	05
3	2013	00	00
4	2014	04	20
5	2015	03	15
6	2016	05	25
7	2017	01	05
8	2018	02	10
9	2019	01	05
10	2020	02	10
	<b>Total</b>	<b>20</b>	<b>100%</b>

**Table 4.**  
Type of the documents of the highly cited publications (n=20)

S. No	Document Type	Number of publications	Percentage
1	Research Article	11	55
2	Conference Paper	06	30
3	Review	03	15
	<b>Total</b>	<b>20</b>	<b>100</b>

over the internet by anyone who wants to study it. This type of access provided so that users can view the documents without any barrier is termed open access. In some cases, the documents' free access is restricted without the permission of the authors or publishers, and to access those publications, some subscription or authorization or otherwise, payment is needed. This type of access is termed closed or restricted access. Table V illustrates the types of access of the top twenty publications.

Table 5 depicts that 50% of the top 20 publications can be accessed openly without restriction, whereas the remaining 50%, i.e., ten publications, have limitations in access.

### AAS of the Publications

Table 6 represents the total Altmetric Attention Score(AAS) and the online attention received by the highly cited top twenty publications on different academic and non-academic social media platforms. The paper titled 'Information and misinformation on COVID-19: A cross-sectional survey study', published in the Journal of Korean Medical Science in the year 2020 has the highest AAS of 39, followed by the paper titled 'Integrity of clinical research conduct, reporting, publishing, and post-publication promotion in rheumatology', published in the year 2020 in the journal titled Clinical Rheumatology.

Table 6 shows that the article 'Information and misinformation on COVID-19: A cross-sectional survey study' has the highest citation count and AAS. It also depicts that 11 out of the twenty highly cited publications do not have any AAS, whereas the publications with serial numbers 2, 10, 13, and 14 have AAS of 11, 15, 13, and 5, respectively. The remaining four publications, i.e., 11, 12, 17, and 19, have an AAS value of 1.

### Altmetric Presence

The online attention received is turned into an Altmetric Attention Score using the default weightings mentioned on the Altmetric.com website. The total number of attentions received by a particular number of publications in a specific altmetric source is divided by the total number of articles, i.e., the average is termed the altmetric presence of the publications in that source.

Table 7 shows the PlumX data of the total number of readers and viewers count (84.6) was the largest, followed by full-text viewers (39.1), Twitter (20.16), which are higher in comparison to Facebook (1.33), News (1) and Wiki (1) respectively.

### Geographical Breakdown of the Users

The published publications are viewed, discussed, shared, and read by users using the internet and social networking sites from other parts of the world. The study of the geographical location of the users for a particular set of publications is referred to as the Geographical breakdown of the users.

Table 8 depicts the geographical data extracted using Altmetric.com to get the location of the users who have mentioned and tweeted about the top twenty publications on various social media platforms.

Table 8 shows that the maximum number of users, 35.66%, are from the countries of Asia, followed by Europe (14.73%), Africa (11.63%), North America (7.76%), South America (6.97%) and Oceania (4.65%). The location of the remaining 18.60% still needs to be determined, as it was not mentioned.

**Table 5.**  
**Types of access of the top 20 publications (n=20)**

Sl. No.	Types of Access	No. of publications	Percentage
1	Open	10	50
2	Closed	10	50
	<b>Total</b>	<b>20</b>	<b>100</b>

**Table 6.****Altmetric attention received by the highly cited top 20 publications on plagiarism on various social media platforms (n=20)**

Paper No*	Cited by	AAS	News	Wiki	Facebook	Twitter	Mendeley	CiteULike	Q&A
1*	67	39	00	00	01	66	187	00	00
2*	58	11	00	00	00	21	149	00	01
3*	33	00	00	00	00	00	31	00	00
4*	29	00	00	00	00	00	23	00	00
5*	28	00	00	00	00	00	61	00	00
6*	27	00	00	00	00	00	29	00	00
7*	26	00	00	00	00	00	43	00	00
8*	25	00	00	00	00	00	60	00	00
9*	24	00	00	00	00	00	26	00	00
10*	23	15	00	00	00	30	18	00	00
11*	21	01	00	00	01	00	272	00	00
12*	21	01	00	00	01	00	65	00	00
13*	21	13	01	00	02	01	167	00	00
14*	21	05	00	01	01	02	82	02	00
15*	20	00	00	00	00	00	262	00	00
16*	20	00	00	00	00	00	53	00	00
17*	20	01	00	00	02	01	30	00	00
18*	19	00	00	00	00	00	35	00	00
19*	19	01	00	00	00	00	23	00	00
20*	18	00	00	00	00	00	76	00	00

Note: \*Please refer to Table I for Paper Titles (1-20)

**Table 7.****Altmetric presence in various social media platforms**

Sl. No.	Altmetric source	Maximum value	Minimum Value	Total no. of publications	Mean
1	Reader	272	18	20	84.6
2	Full-text view	109	23	20	39.1
3	Twitter	66	01	20	20.16
4	Facebook	02	0	20	1.33
5	News	01	0	20	01
6	Wiki	01	0	20	01

### Demographic Breakdown of the Mendeley readers

The data of the Mendeley readers of the highly cited top twenty publications on plagiarism was extracted using PlumX metrics to study the total number of readers according to their professional status and disciplines.

**Table 8.**  
**Geographical breakdown of the altmetric attention contributors**

Sl No.	Continents	No. of users	Percentage
1	Asia	46	35.66
2	Unknown	24	18.60
3	Europe	19	14.73
4	Africa	15	11.63
5	North America	10	07.76
6	South America	09	06.97
7	Oceania	06	04.65
	<b>Total</b>	<b>129</b>	<b>100</b>

### *By Professional Status*

The professional status of the readers is represented according to the profession they are associated with. The readers studying in colleges in undergraduate programs are categorized as Bachelor’s students, and those in post-graduate programs are classified as post-graduate students. Readers doing Ph.D. research are categorized as Ph.D. Scholars, whereas those doing research other than Ph.D., are categorized under Researchers. The readers associated with the teaching and Library profession are classified in the Professor/Librarian section. Readers other than the mentioned profession are categorized in the others section, and those whose profession is not mentioned are put in the Unknown area.

Table 9 represents the data of the Mendeley readers according to their professional status. It shows that the total number of Mendeley readers of the 20 publications is 1692, 275 readers are Bachelor’s students, and 250 are Post-graduate students. Two hundred thirty-five are Ph.D. students, 168 are researchers from various fields, 162 are Professors and Librarians, 288 are other types of professionals, and the profession of the remaining 314 readers is unknown.

Table 9 shows that Bachelor’s students constitute 16.25% of the total readers, followed by Post-graduate students at 14.77%, Ph.D. students at 13.88%, 9.93% from researchers from various fields, and Professors and Librarians at 9.57%. While 17.02% of the readers are other types of professionals, the profession of the rest of 18.58% of readers is not mentioned.

### *By Discipline*

Discipline refers to the field of study the readers are associated with. The subfields and areas related to the same domain are categorized according to the highest number of readers. The disciplines with higher readers are tabulated separately, and those with fewer are classified in the others section. Readers whose disciplines are not known are added to the Unknown area.

Table 10 represents the data about the discipline of Mendeley readers of the highly cited top 20 publications on Plagiarism that were extracted using PlumX metrics. It shows that the total number of Mendeley readers of the 20 publications is 1692, out of which 378 are from the Computer Science discipline, which is the highest among the readers.

Table 10 shows that readers from the Computer Science discipline constitute 22.34% of the total readers, followed by 10.76% from Social Science, 9.52% from Arts and Humanities, 6.67% from Medicine & Dentistry, 5.44% from Science and 4.61% from Commerce. Interestingly, 24.05% are unknown, and 16.61% are from another domain.

**Table 9.**  
Demographic breakdown of the Mendeley readers by professional status

Paper No.	Bachelor Students	Post-graduate Students	Ph.D. Scholars	Researchers	Professor/ Librarian	Others	Unknown	Total
1	26	16	14	16	10	46	59	187
2	12	27	26	09	11	23	41	149
3	03	05	11	07	02	01	02	31
4	04	05	06	03	01	02	02	23
5	05	07	18	04	06	08	13	61
6	05	04	07	05	01	03	04	29
7	15	08	07	03	02	02	06	43
8	10	18	07	06	04	09	06	60
9	06	05	03	02	01	03	06	26
10	05	03	02	03	02	01	02	18
11	37	33	22	32	43	48	57	272
12	15	12	5	03	09	12	09	65
13	53	23	11	11	17	30	22	167
14	17	13	06	12	04	20	10	82
15	22	37	53	29	35	49	37	262
16	12	10	09	07	03	05	07	53
17	03	03	03	04	03	07	07	30
18	09	07	09	04	01	02	03	35
19	03	02	06	02	02	05	03	23
20	13	12	10	06	05	12	18	76
<b>Total readers (%)</b>	<b>275 (16.25%)</b>	<b>250 (14.77%)</b>	<b>235 (13.88%)</b>	<b>168 (9.93%)</b>	<b>162 (9.57%)</b>	<b>288 (17.02%)</b>	<b>314 (18.58%)</b>	<b>1692 (100%)</b>

**Table 10.**  
Demographic breakdown of the readers by discipline

Sl No.	Discipline	No. of Readers	Percentage
1	Unknown	407	24.05
2	Computer Science	378	22.34
3	Others	281	16.61
4	Social Science	182	10.76
5	Arts and Humanities	161	09.52
6	Medicine & Dentistry	113	06.67
7	Science	92	05.44
8	Commerce	78	04.61
	<b>Total</b>	<b>1692</b>	<b>100</b>

## Spearman’s Correlation Analysis

Spearman’s correlation analysis test was done using IBM SPSS Statistics v. 21.0 to study any correlation between the total number of citations and the Altmetric Attention Score (AAS).

Table 11 showed a positive but very minimal correlation coefficient ( $r= 0.096$ ), indicating that citation counts and altmetrics scores are not correlated. As the correlation coefficient is near the value of  $r=0$ , it is considered that there is no correlation between the two variables.

Based on the findings shown above, there is no significant relation between the citation count of a scholarly publication and the altmetric attention it receives.

## DISCUSSION

The results of the objective regarding the citation count of the top twenty highly cited publications from 2011 to 2020 on Plagiarism by Indian authors are summarized below. Firstly, out of the top twenty publications, the highly cited publication has 67 citations and the lowest one has 18 citations. Altogether, the top twenty publications share a citation count of 540 citations which is quite low compared to the publications on plagiarism from other countries. The types of access did not impact the citation as there is no high difference in citation counts in between two or three successive publications.

Secondly, half of the top twenty publications are open access and the rest of the publications are not freely available, which indicated that access type does not affect the number of citations the publication received. The data shows that out of the twenty publications, 15 are journal articles and the other 5 publications are conference papers which indicates that the conference papers also got recognition in terms of citations, in addition to the journal articles.

The Altmetric Attention Score (AAS) of the publications indicated that the online impact on the scholarly world is quite negligible. Only 45% of publications have an altmetric score, which too is very minimal, and the rest 11 publications have no altmetric data. Except for the research article with the highest citation, which contributes 77% of the total AAS of the twenty publications, the Altmetric Attention Score (AAS) of other publications is almost negligible. Compared to the total citation count of 540 of the top twenty publications, the total Altmetric Attention Score (AAS) of 87 is meagre. The social media exposure is relatively very low, but view and reader have high scores. Most of the altmetric scores were contributed by Twitter, almost 45% of them from Asia which depicts that the article gained popularity in India as well from other nearby countries.

The Spearman correlation analysis of the citation count and Altmetric Attention Score (AAS) shows that they are not correlated, suggesting that they are independent. Any change in the citation count value does not impact the Altmetric Attention Score (AAS) and vice-versa. The maximum number of the readers are from the Computer Science discipline, followed by Social Science and Arts and Humanities.

**Table 11.**  
**Spearman’s correlation analysis coefficient**

Spearman’s correlation analysis coefficient (r)		Citation	AAS
	Citation	Correlation Coefficient	1.000
		Sig. (2-tailed)	.687
<b>Spearman’s rho</b>		N	20
	AAS	Correlation Coefficient	.096
		Sig. (2-tailed)	.687
		N	20

## CONCLUSION

Social web development has changed the information-seeking and sharing behavior of the research community and other scholars. The increase in the frequency of publications of their research output over the internet and the rise in scholarly communication on social platforms changed the scenario for calculating research impact. Altmetric study provided the platform to calculate the total effect of research published in the academic world. More than three authors have received more citations from the twenty publications. Further, the study's findings revealed no relation between the citation count and the Altmetric Attention Score (AAS) of the articles, which means the publications seem to have lesser online attention and fewer social media audiences. Using the AltmetricIt tool and PlumX metrics, it was further observed that most publications have zero Altmetric Attention Score (AAS), revealing that neither the authors nor the publishers were interested in sharing or mentioning their publications on social media. Although the publications have many Mendeley readers, it does not count for the online impact. The study found that the citation count of the top twenty highly cited publications published by Indian authors from 2011 to 2020 is much lower than those from other parts of the world. The online attention received by the publications is almost negligible compared to the Altmetric Attention Score (AAS) of the top twenty highly cited publications from other parts of the world. The publications by Indian authors have lesser visibility in the academic world than those published from different parts. In most publications, they never mentioned, tweeted, or shared their queries, feedback, and information through the social web. For a publication to have a widespread impact on the targeted field, it should be cited by many other publications. It should have a higher Altmetric Attention Score.

Based on the analysis and findings, the following suggestions are presented by the researcher to the authors of the publications and future altmetric researchers.

- i) The authors are suggested to publish their papers in open-access journals with higher impact factors to get a larger audience and better citations. This will help the researchers get online attention in their publications.
- ii) The authors are suggested to follow social media platforms and use them frequently. They communicate with other researchers about their work to gather more audiences to get more online attention when their results are published.
- iii) The altmetric researchers are suggested to use different altmetric tools that cover diverse social media platforms to gather the actual data on the online impact of the publications.
- iv) The researcher suggests the altmetric tools provider include various newly developed academic and non-academic social media platforms for gathering altmetric data.

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## REFERENCES

- Akella, A. P., Alhoori, H., Kondamudi, P. R., Freeman, C., & Zhou, H. (2021). Early indicators of scientific impact: Predicting citations with altmetrics. *Journal of Informetrics*, *15*(2), 101128. doi:10.1016/j.joi.2020.101128
- Alperin, J. P. (2013). Ask not what altmetrics can do for you, but what altmetrics can do for developing countries: Ask Not What Altmetrics Can Do for You, But What Altmetrics Can Do for Developing Countries. *Bulletin of the American Society for Information Science and Technology*, *39*(4), 18–21. doi:10.1002/bult.2013.1720390407
- Anderson, M. S., & Steneck, N. H. (2011). The problem of plagiarism. *Urologic Oncology: Seminars and Original Investigations*, *29*(1), 90–94. doi:10.1016/j.urolonc.2010.09.013 PMID:21194643
- Barnes, C. (2015). The Use of Altmetrics as a Tool for Measuring Research Impact. *Australian Academic and Research Libraries*, *46*(2), 121–134. doi:10.1080/00048623.2014.1003174
- Biagioli, M. (2014). Plagiarism, Kinship and Slavery. *Theory, Culture & Society*, *31*(2–3), 65–91. doi:10.1177/0263276413516372
- Costas, R. (2017). *Towards the social media studies of science: Social media metrics, present and future*. *13*(1), 7.
- Crotty, D. (2014). Altmetrics: Finding Meaningful Needles in the Data Haystack. *Serials Review*, *40*(3), 141–146. doi:10.1080/00987913.2014.947839
- Elmore, S. A. (2018). The Altmetric Attention Score: What Does It Mean and Why Should I Care? *Toxicologic Pathology*, *46*(3), 252–255. doi:10.1177/0192623318758294 PMID:29448902
- Garner, H. R. (2011). Combating unethical publications with plagiarism detection services. *Urologic Oncology: Seminars and Original Investigations*, *29*(1), 95–99. doi:10.1016/j.urolonc.2010.09.016 PMID:21194644
- Gu, Q., & Brooks, J. (2008). Beyond the accusation of plagiarism. *System*, *36*(3), 337–352. doi:10.1016/j.system.2008.01.004
- Guidelines | Article Preparation for Submission | Emerald Open Research*. (n.d.). Retrieved June 16, 2022, from <https://emeraldopenresearch.com/for-authors/article-guidelines>
- Helgesson, G., & Eriksson, S. (2014). Plagiarism in research. *Medicine, Health Care, and Philosophy*, *18*(1), 91–101. Advance online publication. doi:10.1007/s11019-014-9583-8 PMID:24993050
- Joob, B., & Wiwanitkit, V. (2018). Plagiarism: Either intentional or unintentional, it is still plagiarism! *Perspectives in Clinical Research*, *9*(3), 151. doi:10.4103/picr.PICR\_17\_18 PMID:30090716
- Maxymuk, J. (2006). The persistent plague of plagiarism. *The Bottom Line (New York, N.Y.)*, *19*(1), 44–47. doi:10.1108/08880450610643070
- Melero, R. (2015). Altmetrics – a complement to conventional metrics. *Biochemia Medica*, *25*(2), 152–160. doi:10.11613/BM.2015.016 PMID:26110028
- Mostofa, S., Tabassum, M., & Ahmed, S. M. Z. (2021). Researchers' awareness about plagiarism and impact of plagiarism detection tools – does awareness effect the actions towards preventing plagiarism? *Digital Library Perspectives*, *37*(3), 257–274. doi:10.1108/DLP-10-2020-0100
- Nan, X., Li, M., & Shi, J. (2020). Using altmetrics for assessing impact of highly-cited books in Chinese Book Citation Index. *Scientometrics*, *122*(3), 1651–1669. doi:10.1007/s11192-020-03347-2
- Penders, B. (2018). Beyond Trust: Plagiarism and Truth. *Journal of Bioethical Inquiry*, *15*(1), 29–32. doi:10.1007/s11673-017-9825-6 PMID:29234992
- Piwozar, H. (2013). Introduction Altmetrics: What, Why and Where? *Bulletin of the American Society for Information Science and Technology (Online)*, *39*(4), 8–9. doi:10.1002/bult.2013.1720390404
- Priem, J., Taraborelli, D., Groth, P., & Neylon, C. (2011). altmetrics: A manifesto. *Copyright, Fair Use, Scholarly Communication. Etc.; a Review of General Semantics*, *5*.
- Roig, M. (2003). *Avoiding plagiarism, self-plagiarism, and other questionable writing practices: A guide to ethical writing*. <https://www.cse.msu.edu/~alexliu/plagiarism.pdf>

Roig, M. (2010). Plagiarism and self-plagiarism: What every author should know. *Biochemia Medica*, 295–300. doi:10.11613/BM.2010.037

Tunger, D., Clermont, M., & Meier, A. (2018). Altmetrics: State of the Art and a Look into the Future. In M. Jibu & Y. Osabe (Eds.), *Scientometrics*. InTech., doi:10.5772/intechopen.76874

*What is Plagiarism?* (2017). Plagiarism.org. <https://plagiarism.org/article/what-is-plagiarism>

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