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Research Article

Citation and Altmetric Attention Score of Top 100 Highly Cited Articles in Health Information Management Journals: A Correlation Study

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ABSTRACT

The study investigates the cross relationship between Citation and Altmetric Attention Scores (AAS) of top 100 articles according to the highest citation in Health Information Management (HIM) journals. This article main goal is to check the relationship of the Citation, Altmetric Attention Score, Mendeley Readership Counts and Twitter score in highly cited articles in Health Information Management Journals. Data extraction was performed online, focusing on HIM topics using the Dimensions.ai database. The primary components of the study include citation counts, Altmetric Attention Score, Mendeley Reader Counts and Twitter Counts. The top 10 journals in HIM, ranked by h-index in the SCImago Journal Rank, were identified. From each of these top 10 journals, the top 10 highest cited articles were selected, constituting total of 100 articles. Microsoft Excel was used for data organization and table plotting. The Sperman Correlation test was conducted using SPSS version 23 software. The most important finding of the study indicates a low degree of positive correlation (rho=0.433) between citation counts and Altmetric attention scores, with statistical significance (p=0.000). The relation of Citations and Mendeley reader counts show a strong and statistically significant positive association (rho=0.628, p=0.000). Citation counts and Twitter scores display a moderate degree of positive correlation (rho=0.363), which is statistically significant (p=0.001).

Keywords: Citation, Altmetric Attention Score, Health Information Management, Twitter.

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INTRODUCTION

Health Information Management (HIM) enables secure and accurate processing and analysis of patient health information. Coding, informatics, data analysis and management are all essential for patient safety and informed healthcare decisions. (Patterson, 2024). Altmetrics allows you to measure and control the scope and activity of research and research by monitoring online interaction. Altmetrics makes advantage of the ability to measure engagement with internet things to assess research impact and reach (Jenkins, 2024). Altmetrics may help you rapidly compile a record of relevant internet attention while spending less time going through data. Positive or negative emotions may be demonstrated, as well as when research provides actual contributions to a field of study (What Are Altmetrics?, 2023). Altmetric Attention Scores (AAS) are metrics and qualitative data for publications that supplement standard citation-based measures. AAS are a supplement to standard citation-based metrics (Webb, 2023). A citation is a reference component that you add to the main body of your work anytime you explicitly quote, paraphrase, summarize, or refer to another author's work (Shibly, 2016). Correlational designs are used in research studies to investigate the correlations, which may exist at various levels, between two or more variables within a single group and forecasting is one of the research methods used to study causal relationships between variables (Devi *et al*., 2023).

REVIEW OF LITERATURE

An analysis of the relationship between citations for six PLOS publications and Altmetric Scores by (Huang *et al*., 2018) to find the associations between Altmetric Attention Scores (AAS), 2406 articles in total were assessed. Spearman correlation testing was performed on all papers, including those containing AAS. The results demonstrate strong positive associations between AAS and Citation. Relationship of Altmetric score and Citation in gynaecologic oncology literature assessing its influence analyses both Altmetric Attention Score (AAS) and conventional bibliometrics within realm of gynaecologic oncology literature. Identify 10 articles for this study from five prominent gynecology journals and ten leading oncology journals that cover gynecologic

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oncology, spanning the years 2014, 2016 and 2018.The connection between Altmetric Score, Impact Factor, Tweets and number of references was determined using Pearson's correlation coefficient. In 2014 there is a positive correlation between the average number of citation and counts average AAS (r=0.92) and 2018 (r=0.97) and Impact Factor in 2014 r=0.78, 2018 r=0.89 correlation. In contrast, in 2016 these cross relations were weak r=0.5 and r=0.41 (Chi *et al*., 2021). As per the findings of the article shows citation numbers in the future are correlated with early Mendeley readers. The relationship between number of first Mendeley counts and number of subsequent comments is stronger than the correlation between later and earlier comments. This shows that Mendeley counts are more useful as early indications of impact than citation ratings. (Thelwall, 2018). Haunschild and Bornmann, (2016) Mendeley stands out as a significant source of Altmetrics data. These papers, all articles from the Web of Science (WoS) core collection published in 2012 were utilized to standardize their Mendeley Reader Counts (MRC). A new metric approach, known as Mean Normalized Reader Score (MNRS), is derived to assess the normalized impact of readership. The cross relation between MNCS and MNRS is higher for 9601 journals than for 76 German universities, according to comparisons made at both the journal and university levels. The increasing utilization of Twitter in cardiovascular medicine, especially during periods of heightened online activity prompted by the COVID-19 pandemic, could present a novel strategy for enhancing the dissemination and visibility of cutting-edge research findings in the field. Betz *et al*., (2024) climes the Microblogging service Twitter as a fast communication platform the study's scope entails conducting interviews and gathering 46,515 tweets from a cohort of 28 scholars. The analysis reveals that while scholars do engage in citing on Twitter, their citations tend to be indirect in nature. Citations on Twitter are integrated into a swiftly evolving discourse, which participants perceive as indicative of scholarly impact. Meta-analysis conducted to provide a comprehensive statistical evaluation of the relationship between variable scores and information scores in clinical practice. We systematically searched Scopus and PubMed, Web of Science to include publications available as of February 29, 2020. This study used Fisher's z transformation to analyse correlations. Research so far has found a positive, but weak, correlation between altmetric scores and citation counts (Kolahi *et al*., 2021).

In the study most Cited Anterior Cruciate Ligament Research connection Altmetric counts, Twitter Performance and Value with Conventional Metrics", explores the Full-text articles published in the period 2011 and 2021 underwent review, with the top 100 cited articles selected. The data collection included parameters such as journal impact factor, h-index, citations count, recent citations, average citations per year and Altmetric Attention Score (AAS). The study's main conclusion emphasizes a noteworthy and favourable association between AAS and the total amount of citations especially those from recent sources (Sezer *et al*., 2023). The journal Stroke (*n*=16) garnered the most attention on social media among those publishing articles. Contrary to expectations, articles with higher Impact Factors (IFs) are not anticipated to receive greater attention on social networking website (Kim *et al*., 2019). Parwani *et al*., (2020) Twitter engagement emerges as one of the most robust individual parameters, offering a dynamic initial evaluation of popular papers within the journal. The American Journal of Emergency Medicine contributed 15 articles and the Annals of Emergency Medicine contributed 65 articles to the study's list of the top 100 referenced papers across six Emergency Medicine (EM) journals (Shuaib *et al*., 2015). The top 100 papers in medical imaging journals with greatest Altmetric Score were examined in this study. Information was gathered about publications, social media, medical imaging, bibliometrics and Altmetric Attention Scores (AAS), Among top 100 articles, 18 pertained to imaging, with Radiology (47%) being the predominant source. Significant proportions (94%) of these articles were released between 2016 and 2018. Most (62%) were American natives who specialized in novel clinical studies. The most common imaging subspecialties were found to be neuroimaging (30%) and MRI (35%). Thirty percent of the publications discussed brain function and disorders(Moon *et al*., 2020).

Objectives of this study

This study aims to achieve the following major objectives.

To know the top 100 most cited articles in Health Information Management (HIM) journals.

To understand the citation impact and Altmetrics score of highly cited articles in Health Information Management.

To measure and compare the strength of correlation of citation counts, Altmetric attention score, Mendeley reader counts and Twitter scores.

Scope of the Study

The investigation covers the top 100 highly cited publications published in the top ten journals in Health Information Management, as assessed by SCImago Journal Rank based on the H index. The Dimensions.ai database was used to obtain Altmetric attention scores as well as component scores. The correlation study is confined to citation counts, Altmetric attention ratings, Mendeley reader counts and Twitter scores.

Methodology of the Study

The method of data collection is the online data extraction method, present study the top ten ranked journals in the area of Health Information Management were selected from the SCImago Journal Rank according to the H index. The top ten highly cited articles were selected from each of the top 10 ranked journals thus constituting a corpus of 100 articles. Dimension ai Database used to collect the citation counts and Altmetric Attention Score

Table 1: Journals selected for the study.

Sl. No.	Journals	h-index
1	Morbidity and Mortality Weekly Report.	247
2	MMWR Recommendations and Reports.	151
3	IEEE Journal of Biomedical and Health Informatics.	146
4	MMWR Surveillance Summaries.	114
5	Journal of Medical Systems.	100
6	Statistical Methods in Medical Research.	99
7	Telemedicine Journal and e-Health.	87
8	Methods of Information in Medicine.	69
9	npj Digital Medicine.	64
10	Studies in Health Technology and Informatics.	64
	Mean	114.1
	Median	99.5

(AAS). Microsoft Excel used to organise the data and plot the table. Utilizing the SPSS ver. 23 software, appropriate descriptive statistics and correlation tests were carried out. Zotero reference tool management software used for referencing. All the data were collected from 1 April 2024 to 13 April 2024.

Analysis and Interpretation of Data

The data has been organized into tables and visually presented wherever necessary. Descriptive statistics and inferential statistical tests have been appropriately carried out Results have been presented.

Journals selected for the study

Table 1 Present the list of 10 Health Information Management Journals selected for the study. SCImago Journal Ranking used to select the journals according to the *h*-index. The Journal Morbidity and Mortality Weekly Report, got the highest h-index of 247, followed by MMWR Recommendations and Reports (2 Journal) with an h-index of 151. npj Digital Medicine (journal 9) and Studies in Health Technology and Informatics (journal 10) received the lowest *h*-index of 64 each. The overall Mean and Median of the *h*-index are 144.1 and 99.5.

Distribution of the top-100 articles

Data from Table 2 illustrates the distribution of the top highly cited 100 papers from the top ten Health Information Management journals, as determined by SCImago Journal Ranking index. To facilitate easy identification, each article has been assigned a code ranging from A01 to A100. Article 1 (A01) "The Measuring Agreement in Method Comparison Studies," published in the Journal of Statistical Methods in Medical Research. This article received the highest citation count of 4353. Two articles, "The Visible Human Project (A99)" and "Mobile-Based Self-Care Application for COVID-19: Development Process Using the ADDIE Model (A100)" each with 17 citations. The top 100 articles together have received 101950 citations. The average citation count stands at 1019.5, while the median citation is 849.

Altmetric Attention Scores (AAS) of Top 100 Articles

Table 3 shows the list of 93 articles ranked according to the Altmetric Attention Score. Out of 100 articles, 7 articles do not have an Altmetric Attention Score. Article A11 is the highest-ranked article with an Altmetric Attention Score of 10187. Articles A66, A67 and A99 have received the lowest Altmetric Attention Score of 1 each. The Mean and Median of AAS are 568.191 and 30.5 respectively for all 93 articles.

Mendeley Readership Counts (MRC)

Mendeley readership counts of top-cited articles listed in Table 4. Among the 100 articles, Mendeley readership counts are available for 93 articles. Article A11, received the highest Mendeley readership count of 2956. Whereas Article A99 has the lowest MRC of 9. The total Mendeley readership count for all 93 articles is 82754, with a mean of 880.361 and a median of 762.

Twitter Scores of Top cited articles

Twitter stands out as a potent instrument for Altmetric Attention Scores. The important objective of the study is to measure and compare the influence of Twitter of the most cited publications in the management of health information. Table 5 data presents the Twitter scores of the top-cited articles. Article A11 has the highest Twitter count of 7479. Additionally, 10 articles have Twitter counts of 1 each. Out of the total articles, 29 do not have a Twitter score. The total score of all articles on Twitter is 23,830, with a mean of 335,633 and a median of 18.

Citations and Altmetric Attention Score

The purpose of the study is to determine the relation of the numbers of citations of the most cited articles in health information management and high Altmetric Attention Score. Hence, the data presented in Table 6 was subjected to a correlation test. The relationship between high Altmetric and the number of citations was examined using Spearman's correlation test (Figure 1).

Spearman's rank correlation coefficient rho = .433 (p =.000) shows that there exists a low degree of positive correlation of citation counts and Altmetric attention scores. Correlation results show that is statistically significant.

Citations v/s Mendeley Readership Counts

The current investigation seeks to determine the relation between Citation counts and Mendeley reader counts. The Mendeley

Table 2: Distribution of top-100 articles.

Article code	Title	Journal	Citation
A01	Measuring agreement in method comparison studies.	Statistical Methods in Medical Research.	4353
A02	Sexually transmitted diseases treatment guidelines, 2015.	MMWR Recommendations and Reports.	3954
A03	Prevalence of Autism Spectrum Disorder Among Children Aged 8 Years-Autism and Developmental Disabilities Monitoring Network, 11 Sites, United States, 2014.	MMWR Surveillance Summaries.	3108
A04	Multiple imputation: a primer.	Statistical Methods in Medical Research.	2766
A05	Revised recommendations for HIV testing of adults, adolescents and pregnant women in health-care settings.	MMWR Recommendations and Reports.	2623
A06	CDC Guideline for Prescribing Opioids for Chronic Pain-United States, 2016.	MMWR Recommendations and Reports.	2570
A07	1993 revised classification system for HIV infection and expanded surveillance case definition for AIDS among adolescents and adults.	MMWR Recommendations and Reports.	2239
A08	Prevalence of Autism Spectrum Disorder Among Children Aged 8 Years-Autism and Developmental Disabilities Monitoring Network, 11 Sites, United States, 2016.	MMWR Surveillance Summaries.	2148
A09	Mental Health, Substance Use and Suicidal Ideation During the COVID-19 Pandemic-United States, June 24-30, 2020.	Morbidity and Mortality Weekly Report.	2145
A10	Hospitalization Rates and Characteristics of Patients Hospitalized with Laboratory-Confirmed Coronavirus Disease 2019-COVID-NET, 14 States, March 1-30, 2020.	Morbidity and Mortality Weekly Report.	2136
A11	Severe Outcomes Among Patients with Coronavirus Disease 2019 (COVID-19)-United States, February 12-March 16, 2020.	Morbidity and Mortality Weekly Report.	2105
A12	Multiple imputation of discrete and continuous data by fully conditional specification.	Statistical Methods in Medical Research.	2101
A13	Prevalence of autism spectrum disorder among children aged 8 years-autism and developmental disabilities monitoring network, 11 sites, United States, 2010.	MMWR Surveillance Summaries.	1971
A14	Increases in Drug and Opioid-Involved Overdose Deaths-United States, 2010-2015.	Morbidity and Mortality Weekly Report.	1928
A15	Youth Risk Behavior Surveillance-United States, 2017.	MMWR Surveillance Summaries.	1796
A16	Optimally estimating the sample mean from the sample size, median, mid-range and/or mid-quartile range.	Statistical Methods in Medical Research.	1761
A17	Traumatic Brain Injury-Related Emergency Department Visits, Hospitalizations and Deaths-United States, 2007 and 2013.	MMWR Surveillance Summaries.	1751
A18	Sexually transmitted diseases treatment guidelines, 2010.	MMWR Recommendations and Reports.	1706

Article code	Title	Journal	Citation
A19	Prevalence of Chronic Pain and High-Impact Chronic Pain Among Adults-United States, 2016.	Morbidity and Mortality Weekly Report.	1705
A20	Scalable and accurate deep learning with electronic health records.	npj Digital Medicine	1661
A21	Increases in Drug and Opioid Overdose Deaths--United States, 2000-2014.	Morbidity and Mortality Weekly Report.	1642
A22	Drug and Opioid-Involved Overdose Deaths-United States, 2013-2017.	Morbidity and Mortality Weekly Report.	1640
A23	Prevalence of autism spectrum disorders--Autism and Developmental Disabilities Monitoring Network, 14 sites, United States, 2008.	MMWR Surveillance Summaries.	1601
A24	Prevention of perinatal group B streptococcal disease--revised guidelines from CDC, 2010.	MMWR Recommendations and Reports.	1585
A25	Prevalence and Characteristics of Autism Spectrum Disorder Among Children Aged 8 Years-Autism and Developmental Disabilities Monitoring Network, 11 Sites, United States, 2012.	MMWR Surveillance Summaries.	1435
A26	Guidelines for the prevention of intravascular catheter-related infections. Centers for Disease Control and Prevention.	MMWR Recommendations and Reports.	1427
A27	Quadrivalent Human Papillomavirus Vaccine: Recommendations of the Advisory Committee on Immunization Practices (ACIP).	MMWR Recommendations and Reports.	1383
A28	Youth risk behavior surveillance-United States, 2011.	MMWR Surveillance Summaries.	1382
A29	Guidelines for prevention and treatment of opportunistic infections in HIV-infected adults and adolescents: recommendations from CDC, the National Institutes of Health and the HIV Medicine Association of the Infectious Diseases Society of America.	MMWR Recommendations and Reports.	1375
A30	Deep Learning for Health Informatics.	IEEE Journal of Biomedical and Health Informatics.	1370
A31	Youth Risk Behavior Surveillance-United States, 2015.	MMWR Surveillance Summaries.	1359
A32	Coronavirus Disease 2019 in Children-United States, February 12-April 2, 2020.	Morbidity and Mortality Weekly Report.	1354
A33	Guidelines for environmental infection control in health-care facilities. Recommendations of CDC and the Healthcare Infection Control Practices Advisory Committee (HICPAC).	MMWR Recommendations and Reports.	1291
A34	Pneumocystis pneumonia--Los Angeles.	Morbidity and Mortality Weekly Report	1276
A35	Coronavirus Disease 2019 Case Surveillance-United States, January 22-May 30, 2020.	Morbidity and Mortality Weekly Report.	1271
A36	An overview of clinical decision support systems: benefits, risks and strategies for success.	npj Digital Medicine.	1139
A37	Review of inverse probability weighting for dealing with missing data.	Statistical Methods in Medical Research.	1134
A38	Prevalence and Characteristics of Autism Spectrum Disorder Among Children Aged 8 Years-Autism and Developmental Disabilities Monitoring Network, 11 Sites, United States, 2018.	MMWR Surveillance Summaries.	1054

Article code	Title	Journal	Citation
A39	Review papers: The statistical basis of meta-analysis.	Statistical Methods in Medical Research.	1039
A40	The future of digital health with federated learning.	npj Digital Medicine.	1037
A41	Controlling the familywise error rate in functional neuroimaging: a comparative review.	Statistical Methods in Medical Research.	1016
A42	Measurement reliability and agreement in psychiatry.	Statistical Methods in Medical Research.	969
A43	Generalized additive models for medical research.	Statistical Methods in Medical Research.	963
A44	Implementation of a Real-Time Human Movement Classifier Using a Triaxial Accelerometer for Ambulatory Monitoring.	IEEE Journal of Biomedical and Health Informatics.	960
A45	Estimating the sample size for a pilot randomised trial to minimise the overall trial sample size for the external pilot and main trial for a continuous outcome variable.	Statistical Methods in Medical Research.	949
A46	Healthcare Data Gateways: Found Healthcare Intelligence on Blockchain with Novel Privacy Risk Control.	Journal of Medical Systems.	934
A47	The Role of Telehealth in Reducing the Mental Health Burden from COVID-19.	Telemedicine Journal and e-Health.	897
A48	Pivotal trial of an autonomous AI-based diagnostic system for detection of diabetic retinopathy in primary care offices.	npj Digital Medicine.	875
A49	The Effectiveness of Telemental Health: A 2013 Review.	Telemedicine Journal and e-Health.	853
A50	Deep EHR: A Survey of Recent Advances in Deep Learning Techniques for Electronic Health Record (EHR) Analysis.	IEEE Journal of Biomedical and Health Informatics.	851
A51	A Survey on Ambient-Assisted Living Tools for Older Adults.	IEEE Journal of Biomedical and Health Informatics.	847
A52	The Unified Medical Language System.	Methods of Information in Medicine.	833
A53	Medical Image Analysis using Convolutional Neural Networks: A Review.	Journal of Medical Systems.	821
A54	Healthcare via Cell Phones: A Systematic Review.	Telemedicine Journal and e-Health.	744
A55	Healthcare Blockchain System Using Smart Contracts for Secure Automated Remote Patient Monitoring.	Journal of Medical Systems.	679
A56	A Comprehensive Survey of Wireless Body Area Networks.	Journal of Medical Systems.	620
A57	Epileptic Seizure Detection in EEGs Using Time-Frequency Analysis.	IEEE Journal of Biomedical and Health Informatics.	617
A58	Automated Breast Ultrasound Lesions Detection Using Convolutional Neural Networks.	IEEE Journal of Biomedical and Health Informatics.	606
A59	A Wearable Health Care System Based on Knitted Integrated Sensors.	IEEE Journal of Biomedical and Health Informatics.	597

Article code	Title	Journal	Citation
A60	The state of artificial intelligence-based FDA-approved medical devices and algorithms: an online database.	npj Digital Medicine.	596
A61	Activity Classification Using Realistic Data from Wearable Sensors.	IEEE Journal of Biomedical and Health Informatics.	587
A62	Gait Analysis Using a Shoe-Integrated Wireless Sensor System.	IEEE Journal of Biomedical and Health Informatics.	583
A63	Detection of Daily Activities and Sports with Wearable Sensors in Controlled and Uncontrolled Conditions.	IEEE Journal of Biomedical and Health Informatics.	582
A64	Use of Telemedicine and Virtual Care for Remote Treatment in Response to COVID-19 Pandemic.	Journal of Medical Systems.	579
A65	Deep learning-enabled medical computer vision.	npj Digital Medicine.	533
A66	Security and Privacy Issues in Wireless Sensor Networks for Healthcare Applications	Journal of Medical Systems.	492
A67	Decision Trees: An Overview and Their Use in Medicine.	Journal of Medical Systems.	489
A68	Empirical Studies on Usability of mHealth Apps: A Systematic Literature Review.	Journal of Medical Systems.	486
A69	Risk Adjustment in Outcome Assessment: The Charlson Comorbidity Index.	Methods of Information in Medicine.	471
A70	Desiderata for Controlled Medical Vocabularies in the Twenty-First Century.	Methods of Information in Medicine.	469
A71	Care Coordination/Home Telehealth: The Systematic Implementation of Health Informatics, Home Telehealth and Disease Management to Support the Care of Veteran Patients with Chronic Conditions.	Telemedicine Journal and e-Health.	466
A72	Telemedicine and the COVID-19 Pandemic, Lessons for the Future.	Telemedicine Journal and e-Health.	455
A73	What Is Telemedicine A Collection of 104 Peer-Reviewed Perspectives and Theoretical Underpinnings.	Telemedicine Journal and e-Health.	445
A74	MedBlock: Efficient and Secure Medical Data Sharing Via Blockchain.	Journal of Medical Systems.	430
A75	Towards Secure and Privacy-Preserving Data Sharing in e-Health Systems via Consortium Blockchain.	Journal of Medical Systems.	429
A76	Cost-Utility and Cost-Effectiveness Studies of Telemedicine, Electronic and Mobile Health Systems in the Literature: A Systematic Review.	Telemedicine Journal and e-Health.	377
A77	Fast and accurate view classification of echocardiograms using deep learning.	npj Digital Medicine.	377
A78	The use of photoplethysmography for assessing hypertension.	npj Digital Medicine.	376
A79	Machine learning-based prediction of COVID-19 diagnosis based on symptoms.	npj Digital Medicine.	366
A80	Integrating machine learning and multiscale modeling-perspectives, challenges and opportunities in the biological, biomedical and behavioral sciences.	npj Digital Medicine.	351
A81	The Impact of Mobile Health Interventions on Chronic Disease Outcomes in Developing Countries: A Systematic Review.	Telemedicine Journal and e-Health.	332

Article code	Title	Journal	Citation
A82	The Empirical Evidence for Telemedicine Interventions in Mental Disorders.	Telemedicine Journal and e-Health.	305
A83	Assessing the Quality of Activities in a Smart Environment.	Methods of Information in Medicine.	302
A84	What is Bioinformatics? A Proposed Definition and Overview of the Field.	Methods of Information in Medicine.	292
A85	Keep Using My Health Apps: Discover Users' Perception of Health and Fitness Apps with the UTAUT2 Model.	Telemedicine Journal and e-Health.	289
A86	Virtual Rehabilitation - Benefits and Challenges*.	Methods of Information in Medicine.	282
A87	Toward Normative Expert Systems: Part I The Pathfinder Project.	Methods of Information in Medicine.	249
A88	The Evolution of Boosting Algorithms*.	Methods of Information in Medicine.	245
A89	The Charlson Comorbidity Index in Registry-based Research.	Methods of Information in Medicine.	228
A90	Perspectives for Medical Informatics.	Methods of Information in Medicine.	225
A91	What is Digital Health? Review of Definitions.	Studies in Health Technology and Informatics.	89
A92	The Usage of OHDSI OMOP-A Scoping Review.	Studies in Health Technology and Informatics.	39
A93	Palpation imaging using a haptic system for virtual reality applications in medicine.	Studies in Health Technology and Informatics.	28
A94	Infodemic, Misinformation and Disinformation in Pandemics: Scientific Landscape and the Road Ahead for Public Health Informatics Research.	Studies in Health Technology and Informatics.	27
A95	AI in Healthcare.	Studies in Health Technology and Informatics.	25
A96	Electronic Health Records and Physician Burnout: A Scoping Review.	Studies in Health Technology and Informatics.	24
A97	The Pros and Cons of Using ChatGPT in Medical Education: A Scoping Review.	Studies in Health Technology and Informatics.	23
A98	Smartphone-Based Healthcare Apps for Older Adults in the COVID-19 Era: Heuristic Evaluation.	Studies in Health Technology and Informatics.	21
A99	The Visible Human Project.	Studies in Health Technology and Informatics.	17
A100	Mobile-Based Self-Care Application for COVID-19: Development Process Using the ADDIE Model.	Studies in Health Technology and Informatics.	17

Table 3: **Altmetric Attention Scores (AAS) of Top 100 Articles.**

Rank	Article code	AAS	Rank	Article code	AAS	Rank	Article code	AAS	Rank	Article code	AAS
1	A11	10187	25	A42	189	49	A18	25	73	A94	10
2	A09	8000	26	A40	162	50	A96	25	74	A57	9
3	A32	4692	27	A21	136	51	A12	24	75	A61	9
4	A35	4158	28	A72	128	52	A68	22	76	A41	8
5	A19	3515	29	A47	118	53	A05	21	77	A51	7
6	A10	3399	30	A71	90	54	A88	20	78	A26	6
7	A14	2818	31	A80	89	55	A16	18	79	A86	6
8	A20	2024	32	A34	87	56	A46	18	80	A92	6
9	A06	1775	33	A36	86	57	A37	17	81	A27	4
10	A38	1737	34	A76	82	58	A54	17	82	A59	4
11	A03	1335	35	A82	80	59	A70	16	83	A74	4
12	A48	1154	36	A02	66	60	A04	15	84	A85	4
13	A25	954	37	A78	62	61	A24	14	85	A43	3
14	A15	841	38	A50	57	62	A63	14	86	A52	3
15	A17	595	39	A84	55	63	A95	14	87	A69	3
16	A08	593	40	A53	51	64	A07	13	88	A83	3
17	A22	481	41	A79	43	65	A56	13	89	A87	3
18	A60	389	42	A81	39	66	A29	12	90	A89	3
19	A30	377	43	A23	35	67	A39	12	91	A66	1
20	A73	367	44	A13	34	68	A44	12	92	A67	1
21	A31	340	45	A91	32	69	A55	12	93	A99	1
22	A65	306	46	A01	31	70	A62	12			
23	A77	266	47	A64	30	71	A28	10			
24	A49	219	48	A45	29	72	A75	10			

			Citation	AAS
Spearman's rho	Citation	Correlation Coefficient	1.000	.433**
		Sig. (2-tailed)	.	.000
		N	93	93
	AAS	Correlation Coefficient	.433**	1.000
		Sig. (2-tailed)	.000	.
		N	93	93

Figure 1: Correlation between Citation and AAS. **The significance level for the correlation is 0.01 (2-tailed).

Counts and Citation Counts bivariate data distribution is shown in Table 7.

A high and statistically significant positive correlation has been found in the total number of citations and the total number of Mendeley counts (Spearman's rank correlation coefficient, Figure 2, rho = 0.628 with p = 0.000).

Citation vs. Twitter Scores

Measuring the degree of association between citation counts and Twitter scores is the study's primary goal. Table 8 shows the distribution of citation counts and Twitter scores.

The Spearman's rank correlation coefficient (Figure 3) value of rho = .365 with p = .002 shows that the number of citations and

Table 4: Mendeley Readers Counts (MRC) of Top cited articles.

Article code	MRC	Article code	MRC	Article code	MRC	Article code	MRC
A11	2956	A46	1100	A37	753	A71	408
A02	2849	A40	1098	A07	694	A26	384
A03	2828	A01	1076	A22	681	A70	367
A20	2792	A84	1055	A81	633	A86	346
A30	2475	A41	1009	A04	631	A39	332
A13	2299	A68	920	A78	630	A27	306
A36	1892	A51	914	A15	623	A52	270
A45	1869	A31	907	A73	593	A56	269
A08	1862	A53	874	A85	590	A91	266
A35	1712	A65	868	A63	579	A83	256
A10	1644	A54	852	A29	565	A88	241
A50	1616	A80	851	A66	547	A43	207
A09	1566	A21	842	A34	538	A42	159
A47	1549	A44	824	A61	520	A89	127
A19	1546	A64	821	A67	515	A69	124
A25	1499	A76	802	A79	482	A94	102
A23	1468	A12	793	A16	475	A87	95
A17	1363	A60	789	A75	461	A95	64
A38	1327	A55	783	A77	458	A96	53
A28	1269	A05	767	A74	455	A92	28
A14	1262	A48	764	A24	450	A99	9
A32	1154	A49	763	A82	437		
A06	1153	A62	761	A57	435		
A18	1146	A72	757	A59	411		

			Citation	MRC
Spearman's rho	Citation	Correlation Coefficient	1.000	.628**
		Sig. (2-tailed)	.	.000
		N	93	93
	MRC	Correlation Coefficient	.628**	1.000
		Sig. (2-tailed)	.000	.
		N	93	93

Figure 2: Correlation between Citation and MCR. **A statistically significant correlation is seen at the 0.01 (2-tailed) level.

Twitter scores have a strong and statistically significant positive correlation.

Findings of the Study

The study found that Top cited articles 100 in the area of the Health Information Management listed in Table 1. "Measuring agreement in method comparison studies" authored by J M Bland and D G Altman got the highest number of citations from 4353 citations among the top 100 articles. "Severe Outcomes among Patients with Coronavirus Disease 2019 (COVID-19) United States", February 12-March 16, 2020 (A11) had the highest altmetric score (10187).

Table 5: Twitter Scores of Top cited articles.

Article code	Twitter Score	Article code	Twitter Score	Article code	Twitter Score	Article code	Twitter Score
A11	7494	A08	136	A78	15	A34	3
A35	3034	A80	135	A88	14	A95	3
A09	2925	A06	111	A68	12	A96	3
A20	2034	A17	103	A73	10	A13	2
A32	1639	A53	76	A56	9	A84	2
A10	1051	A50	74	A71	7	A54	2
A19	627	A31	63	A92	6	A04	2
A48	475	A47	57	A22	5	A28	1
A03	451	A49	44	A85	5	A41	1
A65	434	A81	42	A46	4	A51	1
A14	409	A36	38	A64	4	A63	1
A25	405	A72	33	A55	4	A66	1
A30	361	A82	32	A16	4	A67	1
A60	320	A45	31	A75	4	A74	1
A77	273	A79	25	A70	4	A27	1
A38	262	A21	23	A94	4	A91	1
A15	262	A37	20	A02	3	A99	1
A40	169	A76	18	A23	3		

			Citation	Twitter
Spearman's rho	Citation	Correlation Coefficient	1.000	.365**
		Sig. (2-tailed)	.	.002
		N	71	71
	Twitter	Correlation Coefficient	.365**	1.000
		Sig. (2-tailed)	.002	.
		N	71	71

Figure 3: Correlation between Citation and Twitter. **The correlation is significant at the two-tailed 0.01 level.

The correlation between citation counts and Altmetric attention scores is a low degree of positive correlation (rho=0.433). The correlation is statistically significant at (p=0.000). There is a strong and highly statistically significant positive relation between citation counts and Mendeley Reader Counts (MRC) (rho=0.628, p=0.000). Citation counts and Twitter scores have a moderate degree of positive correlation (rho=0.363). The correlation is statistically significant (p=0.001).

Suggestions

Authors should seek collaborations with peers who boast robust publication records and engage in interdisciplinary research endeavors. Such partnerships can effectively amplify the impact of their work, fostering broader recognition and influence within their respective fields. Authors should actively promote their publications through social media and academic social networks to boost Altmetric attention and encourage greater engagement on social media platforms. This proactive approach can expand the visibility and impact of their research within both academic and broader communities. Authors should regularly monitor their publication metrics, such as Altmetric Attention Score, H5-index and citations, to gauge the impact of their work and pinpoint areas for enhancement. This proactive monitoring enables authors to stay informed about the reception of their research and to make informed decisions to bolster their scholarly impact.

Table 6: Citations vs. Altmetric Attention Score.

Article code	Citation	AAS	Article code	Citation	AAS	Article code	Citation	AAS	Article code	Citation	AAS
A11	2105	10187	A42	969	189	A96	24	25	A28	1382	10
A09	2145	8000	A40	1037	162	A18	1706	25	A61	587	9
A32	1354	4692	A21	1642	136	A12	2101	24	A57	617	9
A35	1271	4158	A72	455	128	A68	486	22	A41	1016	8
A19	1705	3515	A47	897	118	A05	2623	21	A51	847	7
A10	2136	3399	A71	466	90	A88	245	20	A92	39	6
A14	1928	2818	A80	351	89	A46	934	18	A26	1427	6
A20	1661	2024	A34	1276	87	A16	1761	18	A86	282	6
A06	2570	1775	A36	1139	86	A37	1134	17	A85	289	4
A38	1054	1737	A76	377	82	A54	744	17	A74	430	4
A03	3108	1335	A82	305	80	A70	469	16	A27	1383	4
A48	875	1154	A02	3954	66	A04	2766	15	A59	597	4
A25	1435	954	A78	376	62	A95	25	14	A52	833	3
A15	1796	841	A50	851	57	A63	582	14	A83	302	3
A17	1751	595	A84	292	55	A24	1585	14	A43	963	3
A08	2148	593	A53	821	51	A56	620	13	A89	228	3
A22	1640	481	A79	366	43	A07	2239	13	A69	471	3
A60	596	389	A81	332	39	A55	679	12	A87	249	3
A30	1370	377	A23	1601	35	A44	960	12	A66	492	1
A73	445	367	A13	1971	34	A62	583	12	A67	489	1
A31	1359	340	A91	89	32	A29	1375	12	A99	17	1
A65	533	306	A01	4353	31	A39	1039	12			
A77	377	266	A64	579	30	A75	429	10			
A49	853	219	A45	949	29	A94	27	10			

Table 7: Citations vs. Mendeley Readership Counts.

Article code	Citation	MRC	Article code	Citation	MRC	Article code	Citation	MRC	Article code	Citation	MRC
A11	2105	2956	A46	934	1100	A37	1134	753	A71	466	408
A02	3954	2849	A40	1037	1098	A07	2239	694	A26	1427	384
A03	3108	2828	A01	4353	1076	A22	1640	681	A70	469	367
A20	1661	2792	A84	292	1055	A81	332	633	A86	282	346
A30	1370	2475	A41	1016	1009	A04	2766	631	A39	1039	332
A13	1971	2299	A68	486	920	A78	376	630	A27	1383	306
A36	1139	1892	A51	847	914	A15	1796	623	A52	833	270
A45	949	1869	A31	1359	907	A73	445	593	A56	620	269
A08	2148	1862	A53	821	874	A85	289	590	A91	89	266
A35	1271	1712	A65	533	868	A63	582	579	A83	302	256
A10	2136	1644	A54	744	852	A29	1375	565	A88	245	241
A50	851	1616	A80	351	851	A66	492	547	A43	963	207
A09	2145	1566	A21	1642	842	A34	1276	538	A42	969	159

Article code	Citation	MRC	Article code	Citation	MRC	Article code	Citation	MRC	Article code	Citation	MRC
A47	897	1549	A44	960	824	A61	587	520	A89	228	127
A19	1705	1546	A64	579	821	A67	489	515	A69	471	124
A25	1435	1499	A76	377	802	A79	366	482	A94	27	102
A23	1601	1468	A12	2101	793	A16	1761	475	A87	249	95
A17	1751	1363	A60	596	789	A75	429	461	A95	25	64
A38	1054	1327	A55	679	783	A77	377	458	A96	24	53
A28	1382	1269	A05	2623	767	A74	430	455	A92	39	28
A14	1928	1262	A48	875	764	A24	1585	450	A99	17	9
A32	1354	1154	A49	853	763	A82	305	437			
A06	2570	1153	A62	583	761	A57	617	435			
A18	1706	1146	A72	455	757	A59	597	411			

Table 8: Citation vs. Twitter Scores.

Article code	Citation	Twitter Score	Article code	Citation	Twitter Score	Article code	Citation	Twitter Score	Article code	Citation	Twitter Score
A11	2105	7494	A08	2148	136	A78	376	15	A34	1276	3
A35	1271	3034	A80	351	135	A88	245	14	A95	25	3
A09	2145	2925	A06	2570	111	A68	486	12	A96	24	3
A20	1661	2034	A17	1751	103	A73	445	10	A13	1971	2
A32	1354	1639	A53	821	76	A56	620	9	A84	292	2
A10	2136	1051	A50	851	74	A71	466	7	A54	744	2
A19	1705	627	A31	1359	63	A92	39	6	A04	2766	2
A48	875	475	A47	897	57	A22	1640	5	A28	1382	1
A03	3108	451	A49	853	44	A85	289	5	A41	1016	1
A65	533	434	A81	332	42	A46	934	4	A51	847	1
A14	1928	409	A36	1139	38	A64	579	4	A63	582	1
A25	1435	405	A72	455	33	A55	679	4	A66	492	1
A30	1370	361	A82	305	32	A16	1761	4	A67	489	1
A60	596	320	A45	949	31	A75	429	4	A74	430	1
A77	377	273	A79	366	25	A70	469	4	A27	1383	1
A38	1054	262	A21	1642	23	A94	27	4	A91	89	1
A15	1796	262	A37	1134	20	A02	3954	3	A99	17	1
A40	1037	169	A76	377	18	A23	1601	3			

CONCLUSION

Altmetric Score is one of the most powerful tools to evaluate the research output. The transition from traditional metrics to altmetrics marked a significant paradigm shift, empowering the entire research community to engage actively on the social web. This shift enables researchers to enhance the value of their output by leveraging social media as a platform for publication and dissemination(Babu H and Chingath, 2019). Trying to understand the correlation between citation counts, Altmetric Attention Scores, Mendeley readership and Twitter scores is useful for academics, institutions and journal publishers. Stakeholders may use these insights to make more informed decisions about the reach and impact of their research contributions. This proactive strategy promotes increased collaboration and widespread information dissemination, which benefits both the academic community and society as a whole.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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