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THE ONLINE ATTENTION TO SPIRITUAL HEALTH RESEARCH: AN ALTMETRIC ANALYSIS

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Abstract

Introduction: *As a multidisciplinary field of study, spiritual health attracted the great attention of scholars all over the world. This altmetric survey aimed to investigate the attention to papers published on the field in online social media.*

Material and Methods: *Including all papers on spiritual health indexed in Scopus, related keywords were searched in Altmetric Explorer for measuring Altmetric attention scores and Scopus, Google scholar and dimensions for citation counts of the papers. Collected data was analyzed with SPSS.*

Results: *Out of 12,576 papers, only 4,804 papers (38.19%) had Altmetric attention scores. The majority of papers (n=3,957; 82.36%) had Altmetric attention scores between 1 and 10. 5,706 papers (45.37%) were shared in Mendeley as the top-ranked mentioning social media, followed by Twitter by including 3,929 papers (31.24%) and Facebook with 1,016 papers (8.07%). Regrading event counts, Mendeley ranked first with 331,221 events and mean event rate of 58.04 events per paper, followed by News with 4,093 events and Twitter with 3,464 events. The first-ranked journal in total mentions was the Journal of Psychopharmacology from the UK, with 3,156 mentions of its 19 papers. PLOS ONE from the USA ranked second with 50 papers mentioned 1,763 times. The third rank belonged to the Journal of Religion & Health with 184 papers mentioned 879 times. The USA ranked first in Twitter with 7,457 tweets from 3,938 unique profiles, in Facebook with 300 posts from 184 unique profiles and again in News with 2,680 news stories from 529 unique news outlets, and in Policy, the UK ranked first with 148 policy documents. Top-ranked papers in Altmetric attention scores were of relatively high-cited papers published in high-prestige journals.*

Conclusion: *This study explored main altmetric indicators of the papers published on spiritual health as an ever-increasing considered topic for the first time and can be a guide for readers, researchers, authors and administrators interesting the field.*

Keywords: *Altmetrics, Bibliometrics, Spiritual Health*

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Introduction

Spiritual health as a core dimension of human well-being integrates physical, psychological, and social aspects to create harmony and purpose in life. Recent evidence highlights that spirituality enhances psychological resilience, self-esteem, and life satisfaction, forming an essential component of holistic health [*Bożek et al., 2020*].

Spiritual health also contributes to better physiological outcomes, such as reduced blood pressure, inflammation, and glucose levels, indicating its role in physical health regulation [*Holt-Lunstad et al., 2011*]. Moreover, spirituality fosters mental peace, meaning, and connectedness, supporting adaptation to stress and illness [*Kaneez and Ansari, 2014*].

Empirical models further reveal that spiritual health mediates the relationship between spirituality and psychological well-being, emphasizing its integrative role in maintaining balance between internal and external dimensions of life [*Shakarian et al., 2021*].

The World Health Organization's recognition of spirituality as an element of complete health underscores its universal relevance beyond religious boundaries [*Hamilton et al., 2017*]. Additionally, research indicates that spiritual well-being enhances social relationships and workplace harmony, aligning personal values with collective ethical practices [*Foster and Wall, 2018*]. Altogether, spiritual health should be regarded as a dynamic and foundational element of human wellness, deeply interconnected with mental, social, and physical dimensions. Its holistic influence extends from individual growth to collective health and societal harmony.

Bibliometrics as a quantitative study of different features of scientific items and agents agents [*Imani et al., 2019; Amiri et al., 2023*], heavily focuses on traditional citation analyses [*Kolahi and Khazaei, 2016*]. However, citation counts can not necessarily be some signs of the quality of an individual scientific agent [*Priem et al., 2011; Gunn, 2013; Piwowar and Priem, 2013; Sud and Thelwall, 2014*]. For example, one of the weaknesses of this measurement is that citation process is long-term [*Wang, 2013*]. Citation counts can be manipulated by self-citations or false citations [*Masic, 2013*]. Citations may not relate to the intellectual influence or may be so-called negative sense of the cited items [*Bornmann, Daniel 2008; Haustein 2014*]. At last, the citation does not reflect the views of public, ones out of the academic realm [*Puschmann, 2014*].

The scientific publication in an electronic format as well as the speedy development of the Net as a social medium resulted in the fast distribution of/and accurately monitoring scientific data in the public domain and creating consequent approaches to evaluation of academic knowledge [*Weller et al., 2011; Priem et al., 2012; Wouters and Costas, 2012*]. Health professionals and patients increasingly use the communicative media for facilitated contacts and disseminating scientific information [*Hamm et al., 2013a; Hamm et al., 2013b*], such as using Twitter in the biomedical literature [*Haustein et al., 2014b*]. For setting a forum for the public and measuring the immediate influence of public-engaged scientific items, altmetrics was coined by Jason Priem in 2010 [*Kwok, 2013*]. It is conceived as a complement to bibliometrics, especially citation analysis [*Thelwall et al., 2013; Dinsmore et al., 2014; Melero, 2015; Esmaeilzadeh et al., 2023; Saberi et al., 2021; Shamloo Z et al., 2022]*. Some websites and projects tend to measure the altmetric attention scores (AASs), including among others, altmetric explorer, plum analytics and impactstory [*Melero, 2015; Kolahi, 2015*]. They measure these scores by counting the numbers of views, downloads, likes, mentions, shares, posts and blogs on a certain item and scientific output reported in different platforms, social media and weblogs. Altmetrics is increasingly accepted by academics, research institutions and grant organizations for decision making [*Li et al., 2012; Piwowar, 2013; Haustein et al., 2014a; Elmore, 2018; Ouchi et al., 2024; Ansari et al., 2025*]. Altmetric as a developing approach measures the influence of research on lay audience [*Chavda and Patel, 2016*] and allows a scientific item to be evaluated based on its mere effect apart from its publishing agents or other interlinking items [*Neylon and Wu, 2009*] in a real time, as an immediate impact factor [*Neylon and Wu, 2009; Priem and Costello, 2010; Lapinski et al., 2013; Liu et al., 2013; Brigham, 2014; Haustein et al., 2015; Navidi and Mansourian, 2015; Trueger et al., 2015*].

As many studies of different kinds have been conducted in the field of spiritual health, no study

considered these studies in a comprehensive altmetric analysis. Therefore, this altmetric research aimed to investigated into some main altmetric features of research in the field.

MATERIAL AND METHODS

This applied study took an altmrtric/a bibliometric approach for all papers published on spiritual health indexed in Scopus from the beginning of their being indexed in 1895 to 2023. Data was collected with searching for the related keywords in Altmetric Explorer for measuring AASs and Scopus, Google Scholar and Dimensions for citation counts. These keywords included: "religious health" "spiritual health", "Spirituality health", "Mystical health", "Religious practice", "Spiritual practice", "Spirituality practice", "Mystical practice", "Religious practices", "Spiritual practices", "Spirituality practices", "Mystical practices", "Religious experience", "Spiritual experience", "Spirituality experience", "Mystical experience", "Religious care", "Spiritual care", "Spirituality care", "Mystical care", "Spiritual therapies", "Therapies, Spiritual", "Exorcism", "Exorcisms", "Spiritual healing", "Healing, Spiritual", "Healings, Spiritual" and "Spiritual Healings" that all were searched in the title, abstract and keyword fields. These keywords were extracted from related literature and medical subject headings. After correcting inconsistencies in data, SPSS was used for describing and analyzing data.

RESULTS

The presence of spiritual health papers in online social media: 14,610 papers on the spiritual health were retrieved via Scopus. Of them, 12,576 papers with DOIs were included as only papers with DOIs can have AASs in Altmetric Explorer. Out of them, only 4,804 papers (38.19%) has AASs (i.e. mentioned at least once in online social media) and 7,772 papers (61.81%) had no AASs. Figure 1 shows the number of papers versus the ranges of their AASs. The majority of papers (n=3,957; 82.36%) had AASs between 1 and 10. The high the rank of AAS ranges are, the low the numbers of papers are. Only 98 papers had AASs greater than or equal to 100.

The rate of presence of spiritual health papers (ones with DOIs; n=12,576) in different online social media is shown in Figure 2. As seen, 5,706 papers (45.37%) were shared in Mendeley as the top-ranked social media in this regard, followed by Twitter by including 3,929 papers (31.24%) and Facebook with 1,016 papers (8.07%). Syllabi had no role in this regard.

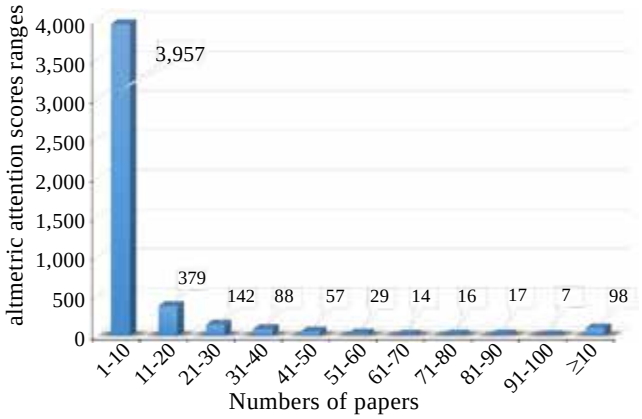

FIGURE 1. *Frequency distribution of spiritual health papers based on their AAS ranges*

For accurate and detailed depiction, some altmetric features of spiritual health papers presented in the studied social media were reported in Table 1 Mendeley ranked first with 331,221 events and

TABLE 1.

Some altmetric indicators of online social media presenting spiritual health papers (n=14,610)

Rank	Sources of attention	Total atmetric events	Mean Events per Paper (Rank)	Max	Min
1	Mendeley	331,221	58.04 (1)	1943	1
2	News	4,093	7.34 (2)	557	1
3	Twitter	3,464	.88 (13)	422	1
4	Facebook	2111	2.07 (7)	59	1
5	Wikipedia	1263	2.60 (5)	35	1
6	Blog	1131	1.93 (8)	53	1
7	Policy	597	1.5 (10)	10	1
8	Google+	384	2.95 (4)	59	1
9	Reddit	219	2.19 (6)	26	1
10	Video	165	1.65 (9)	10	1
11	Patent	107	4.65 (3)	16	1
12	Peer Review	67	1.36 (12)	5	1
13	Q&A	16	1.45 (11)	4	1
14	F1000	9	1 (14)	1	1
15	Weibo	1	1 (14)	1	1
15	LinkedIn	1	1 (14)	1	1
15	Pinterest	1	1 (14)	1	1
16	Syllab	0	0 (15)	0	0
-	Total	344,859	-	-	-

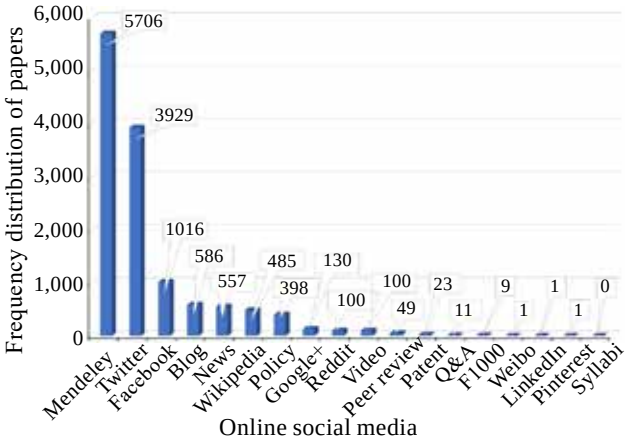

Figure 2. *Frequency distribution of spiritual health papers presented in online social media*

mean event rate of 58.04 events per paper, followed by News with 4,093 events and mean event rate of 7.34 events per paper, and Twitter with 3,464 events and mean event rate of .88 per paper.

Top highly-presented journals publishing spiritual health papers in online social media: Table 2 lists and presents some bibliographic and bibliometric features of the top ten highly-presented journals with papers on spiritual health, out of 1,616 journals regarding the subject. The first-ranked journal in total mentions was the *Journal of Psychopharmacology* from the UK, with 3,156 mentions of its 19 papers. *PLOS ONE* from the USA ranked second with 50 papers mentioned 1,763 times. The third rank belonged to the *Journal of Religion & Health* with 184 papers mentioned 879 times.

Top highly-mentioning countries of origin of spiritual health papers: Table 3 shows the characteristics of top 10 highly-mentioning countries of origin of papers on spiritual health. In total, 34,640 tweets from 168 countries 20,116, face book posts and pages from 39 countries 4,093. News stories from 38 countries and 597 policy documents from 15 countries shared and mentioned spiritual health papers.

In twitter, the USA ranked first with 7,457 tweets from 3,938 unique profiles, followed by the UK with 7,457 tweets and Canada with 1,402 tweets. 14,294 tweets from 8,603 accounts had no information on their accounts.

In Facebook, the USA ranked first wit h 300 posts from 184 unique profiles, followed by the UK with 48 posts and Australia with 28 posts. 1,585 posts had no certain account information.

In News, the USA was in the top, with 2,680 news stories from 529 unique news outlets, followed by the UK with 364 news stories and Australia with 259 news stories. 16 posts had no certain account information.

In Policy, the first-ranked country was the UK with 148 policy documents followed by Switzer-

Table 2.

Features of top ten journals publishing papers on spiritual health presented/mentioned in online social media

Rank	Journal title	ISSNs	Number of mentioned papers	Total mentions	Country	SJR*	H-Index (Rank)
1	Journal of Psychopharmacology	0269-8811, 1461-7285	19	3156	UK	1.333	114 (4)
2	PLOS ONE	1932-6203	50	1763	USA	0.990	332 (1)
3	Journal of Religion & Health	0022-4197, 1573-6571	184	897	USA	0.548	40 (8)
4	Palliative Medicine	1477-030X, 0269-2163	26	839	UK	1.989	106 (5)
5	Journal of Pain & Symptom Management	0885-3924, 1873-6513	77	829	USA	1.438	140 (3)
6	Frontiers in Pharmacology	1663-9812	6	712	Switzerland	1.384	86 (7)
7	Psychopharmacology	0033-3158, 1432-2072	11	701	Germany	1.378	196 (2)
8	BMC Palliative Care	1472-684X	49	680	UK	1.151	39 (9)
9	Journal of Palliative Medicine	1096-6218, 1557-7740	70	649	USA	0.986	90 (6)
10	Religions	2077-1444	162	579	Switzerland	0.256	22 (10)

Notes: **SJR: Scientific Journal Rankings, BMC - Boston medical centre*

TABLE 3.

Top 10 Countries in Twitter, Facebook, News and Policy based on the number of their shared posts on spiritual health papers

R	Country name	Number of posts	Number of profiles
Twitter			
1	United States	7457	3938
2	United Kingdom	3909	2338
3	Canada	1402	906
4	Spain	875	540
5	Australia	768	469
6	Netherlands	449	225
7	India	393	326
8	France	345	205
9	Ireland	303	188
10	Germany	294	186
Facebook			
1	United States	300	184
2	United Kingdom	48	37
3	Australia	28	25
4	Canada	22	17
5	Brazil	21	12
6	Spain	20	8
7	Mexico	11	5
8	Germany	9	8
9	Netherlands	7	5
10	Japan	7	4
News			
1	United States	2680	529
2	United Kingdom	364	60
3	Australia	259	31
4	India	175	62
5	Canada	56	22
6	Russia	50	16
7	Germany	46	17
8	New Zealand	44	6
9	Spain	43	30
10	Turkey	43	2
Policy			
1	United Kingdom	148	8
2	Switzerland	132	4
3	United States	119	12
4	Australia	94	3
5	Germany	44	1
6	Netherlands	24	4
7	Sweden	12	2
8	Italy	8	1
9	Luxembourg	5	1
10	Norway	3	1

land with 132 policy documents and the USA with 119 policy documents.

Top highly-mentioned affiliations: Top three highly-mentioned affiliations were Johns Hopkins University with 56 papers mentioned 3,131 times, Harvard University with 84 papers mentioned 1,501 times, and King's College London with 33 papers mentioned 1,492 times, respectively (other details were not presented here).

Top papers in AASs and their citation performance: Table 4 lists the top ten spiritual health papers in AASs in Altmetric Explorer and Table 5 shows their main citation indicators presented in Google Scholar, Scopus and Dimensions. As Table 4 shows, a paper entitled "Psilocybin produces substantial and sustained decreases in depression and anxiety in patients with life-threatening cancer: A randomized double-blind trial" ranked first with AAS= 2,591. The paper was authored by R. R. Griffiths et al in the *Journal of Psychopharmacology* in November 2016. The twitter count (249) and News count (271) of the paper was higher than those of the other papers. The second-ranked paper by S. Ross et al. entitled as "Rapid and sustained symptom reduction following psilocybin treatment for anxiety and depression in patients with life-threatening cancer: a randomized controlled trial" had AAS=2,190. It was published in *the journal of Psychopharmacology* in November 2016. The Twitter count of the paper (330) was the highest among those of the other papers. The third-ranked paper with AAS=1,565 entitled as "Reward, salience, and attentional networks are activated by religious experience in devout Mormons". it was published by M. A. Ferguson et al. in *Social Neuroscience* in November 2016. Four papers among these top ones were published in *the Journal of Psychopharmacology*.

As table 5 shows, the above-mentioned first-ranked paper in AASs received 1,077 citations in Google Scholar, 567 citations in Scopus and 666 citations in Dimensions, respectively. These counts were the highest among those of the other papers. The citation counts of the above-mentioned second-ranked paper were 861 in Google Scholar, 480 in Scopus and 554 in Dimensions. In case of the above-mentioned third-ranked paper, the citation counts equaled to 69 in Google Scholar, 19 in Scopus and 28 in Dimensions. All but one of these papers were co-authored papers, too.

Table 4.

Top 10 highly-altmetric attention scores (AASs) papers on spiritual health

Rank	Article	Source Title	AAS	TC	NC	BC	FBC	WC	RC	MC	PS	VC
#1	Griffiths et al., 2016	Journal of Psychopharmacology	2591	249	271	22	26	4	3	1687	0	8
#2	Ross et al., 2016	Journal of Psychopharmacology	2190	330	225	21	16	11	6	1465	0	2
#3	Ferguson et al., 2018	Social Neuroscience	1565	140	164	0	6	1	0	178	0	4
#4	Levin, 2016	Journal of Religion & Health	716	5	92	0	0	0	0	39	0	0
#5	Twenge et al., 2016	SAGE Open	586	66	66	16	0	0	1	58	0	0
#6	Polito and Stevenson, 2019	PLOS ONE	576	153	43	11	11	9	10	472	0	3
#7	Powell and Moseley, 2020	Mental Health, Religion and Culture	554	46	61	17	1	0	0	14	0	0
#8	Griffiths et al., 2008	Journal of Psychopharmacology	534	34	49	22	42	17	0	773	0	2
#9	MacLean et al., 2011	Journal of Psychopharmacology	519	75	36	6	49	16	3	736	0	2
#10	Johnson et al., 2017	American Journal of Drug & Alcohol Abuse	468	78	45	41	6	0	4	475	0	6

Notes: *AAS - altmetric attention score, TC - twitter count, NC - news count, BC - blog count, FBC - facebook count, WC - wikipedia count, RC - reddit count, VC - video count, PS - policy source, MC - mendeley count.*

Discussion and Conclusion

More than a half of spiritual health papers had not any AASs reflecting that they were not considered in online social media. In addition, the majority of papers with these scores had ASSs in range of 1-10. It can be concluded that researchers, authors, specialists and decision-making agents in the field need to promote the ways to distribute scientific items in the field in online social media more than ever.

As Mendeley, Twitter and Facebook are of top-ranked media in sharing spiritual health papers, focusing on other social media (such as Blogs, News and Policy) as platforms for publicizing these papers is a useful way of more contributing to the field.

Considering the count of total altmetric events occurred in different altmetric sources as a sign of their usability in disseminating scientific data, Mendeley, News and Twitter have better performance than the other source. Therefore, these three sources are now more suitable forums for manifesting spiritual health papers.

Some high-prestige journals in the field are more active in online social media and their presence in the media can result in more visibility of their scientific output and consequent more influence on the public and professionals. A glance on the list of highly-mentioned journals in the field reveals that these journals have considerable citation performance and influence as their Scientific Journal Rankings and h-indexes show. However, they shared few papers in the online social media and more papers published in the journals were ig-

Table 5.

Citation performance of top 10 highly-AAS papers on spiritual health

No.	Article Title (Reference)	Type of document	Google Scholar	Scopus	Dimensions
1	Griffiths et al., 2016	Article	1077	567	666
2	Ross et al., 2016	Article	861	480	554
3	Ferguson et al., 2018	Article	69	19	28
4	Levin, 2016	Article	41	14	19
5	Twenge et al., 2016	Article	88	29	35
6	Polito and Stevenson, 2019	Article	149	73	87
7	Powell and Moseley, 2020	Article	6	3	3
8	Griffiths et al., 2008	Article	806	387	411
9	MacLean et al., 2011	Article	710	358	414
10	Johnson et al., 2017]	Article	321	180	213

nored. The countries of origin of these journals are European countries and the USA. This finding reveals that many attempts need to be made for more collaboration of other countries in the field in order to make so-called internalization in sharing the scientific output of the field.

As the top-ranked research institutions / universities present in online social media are from the USA and the UK, these universities are more active in the field and have some related academic disciplines related to spiritual health. Again, more international collaboration in an institutional level can increase more visibility of other research agents at work.

When regarding top-ranked mentioning countries, the USA and the UK are more active as the number of their shared posts in Twitter, Facebook, News and Policy shows. However, several non-European countries (such as India, Japan, Turkey and Australia) are present among top ten highly-mentioning countries. It appears that many countries are not active enough in this domain.

Top highly-mentioned spiritual health papers dealt with some topics in nursing, health care, religion and psychology, such as depression, anxiety, disease management and alcohol abuse. This reflects the multidisciplinary nature of the field [*Jaberi et al., 2019*] that reveals that researchers from different disciplines can contribute to the field. In addition, such topics of general interest to the public took the highest online attention. The citation performance and scientific influence of these papers were relatively satisfying. However, further research is needed for investigating the possible relationship between altmetric performance and bibliometric performance of spiritual health papers.

Altmetric analysis is a new way of assessing and evaluating the scientific knowledge shared in the public domain. Scholars in spirituality health studies have contributed to the wealth of both qualitative and quantitative scientific data [*Como, 2007*]. Spiritual practices that facilitate spiritual health are embedded within many mental and physical interventions. Spiritual health has attracted a lot of attention in health-related and nursing sciences and numerous researches have been produced. This big-volume of scientific data should be evaluated from its reach and influence with bibliometric and altmetric analysis. As a step forwards, this study explored main altmetric indicators of the papers published on this main topic for the first and can be a guide for readers, researchers, authors interesting and administrators dealing with the field.

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