Growth of Literature on Jaundice Research Publications during 2009-2018 from Scopus Database: A Scientometrics Study

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Abstract

The present paper analyses jaundice research publications were contributed from SCOPUS online database during the period between 2009 and 2018 with 20885 research publications. This study analyzes year wise growth of publications, relative growth rate and doubling time, top 10 authors, document type, country, language, and affiliation. During the study period, it is identified that a maximum number of 2275(10.89%) research publications in the year 2015, the relative growth rate is decreasing trend and doubling time is increasing trend. Top ranking author is Rahmatullah, M with 45(11.87%) research publications.

Keywords

Bibliometrics; Scientometrics; Jaundice, Relative Growth Rate and Doubling time

Electronic access

The journal is available at www.jalis.in

Journal of Advances in Library and Information Science
ISSN: 2277-2219 Vol. 8. No.4. 2019. pp.157-162

INTRODUCTION

Scientometrics analyses have been used to measure the scientific literature published online or offline through the scientometrics techniques and statistical tools. According to Nalimov and Mulchenko (1969)[1] of USSR defined "scientometrics as the quantitative methods which deals with the analysis of science viewed as an information process". Beck (1978)[2] defined as "the quantitative evaluation and inter-comparison of scientific activity, productivity and progress". Tague-Suteliffe (1992)[3] defined scientometrics as a "study of the quantitative aspects of science as a discipline or economic activity. It is part of the sociology of science and has application to science policy making. It involves quantitative studies of scientific activities including, among others, publication, and so overlaps bibliometrics to some extent".

JAUNDICE

Jaundice is the most important and visible symptom of hepatobiliary disorders. The term jaundice indicates yellow discoloration of the sclera, mucous membranes, skin and nail beds. Such yellow discoloration of various body tissues is due to hyperbilirubinaemia, which has innumerable causes and its optimal management has been a challenge for clinicians since centuries. During the past few decades, the elucidation and understanding of bilirubin metabolism, and easy access to various biochemical and imaging techniques have made it possible to identify the underlying pathogenesis process causing jaundice. On the other hand, sophisticated and powerful investigative techniques, unless used judiciously, may expose a patient to unnecessary discomfort, risk and cost. Therefore, a rational approach to a patient with jaundice requires optimal selection of diagnostic and therapeutic techniques based on meticulous clinical assessment of the probable pathogenetic process causing jaundice. This would provide a definitive diagnosis of the cause of jaundice in most patients[4].

OBJECTIVES

The following are the main objectives of the study,

- To identify the year wise growth of Jaundice research publications
- To analysis relative growth rate and doubling time
- To identify the top ten authors contributions
- To identified the document types

- To analysis the top ten countries, institutions, and affiliations wise contributions
- To analysis the top ten language-wise publications

METHODOLOGY

This study focused on the scientometrics analysis of jaundice research publications and the data were collected from the SCOPUS online database from 2009 to 2018. During the study, the following search strategy is used to collect the data. The search key is (TITLE-ABS-KEY ("Jaundice") AND PUBYEAR > 2008 AND PUBYEAR < 2019). The extracted data has been analyzed using MS Excel software to classify the research data.

REVIEW OF LITERATURE

Vivekanandhan, Sivasamy and Bathrinarayanan[5] (2016) analyzed the pollution control research output from 1985 to 2014 and the data were reflected from the SCOPUS database. They analyzed his study, the growth of literature, Bibliographic distribution, authorship pattern, Citation Index, Collaborative Coefficient, Modified Collaborative Coefficient and block year-wise publications. They identified his study degree of collaboration was 0.71. Co-authorship Index was 2.694, Collaborative Coefficient was 0.435 and Modified collaborative coefficient was 0.435. Top 20 institutions are contributed 4387 (8.15%) publications within 5 countries and the most prolific countries are China–9 and USA–6. Siva, Vivekanandhan and Manickaraj[6] (2018) analyzed digital library research publications from the SCOPUS database during 2008 - 2017 with 10345 publications. They analyzed his study year wise growth, top 10 authors, institutions, countries, authorship pattern, citation range, degree of collaboration, relative growth rate and doubling time. They identified his study the highest of 1199 (11.59%) publications in the year 2009 with 6905 (14.53%) citations, average degree of collaboration was 0.78, relative growth rate was decreasing trend and doubling time was increasing trend. The United States ranked first with 2650 (25.62%) publications and Giles C.L. stands with the highest of 59 (0.57%) publications with 643(1.35%) citations and the h-index was 15. Venkatesan, Gopalakrishnan and Gnanasekaranan[7] (2013) analyzed climate change research publications using the Web of Science database during 1999-2012 with 94756 contributions. They analyzed his study year wise growth, country, language, document type, relative growth rate and doubling time. They identified his study relative growth rate was decreasing trend and doubling time was increasing trend. Around 60% of the researches were carried out climate change research by funding agencies.

DATA ANALYSIS AND RESULTS

Year-wise Distribution of Jaundice Research Publications

Table 1: Year-wise growth of Jaundice Research Publications

Sl.No	Year	Publi-cations	%	Cum. Publications	%
1	2009	1837	8.80	1837	8.80
2	2010	1971	9.44	3808	18.23
3	2011	2013	9.64	5821	27.87
4	2012	2248	10.76	8069	38.64
5	2013	2221	10.63	10290	49.27
6	2014	2220	10.63	12510	59.90
7	2015	2275	10.89	14785	70.79
8	2016	2071	9.92	16856	80.71
9	2017	2053	9.83	18909	90.54
10	2018	1976	9.46	20885	100.00
Total		**20885**	**100.00**		

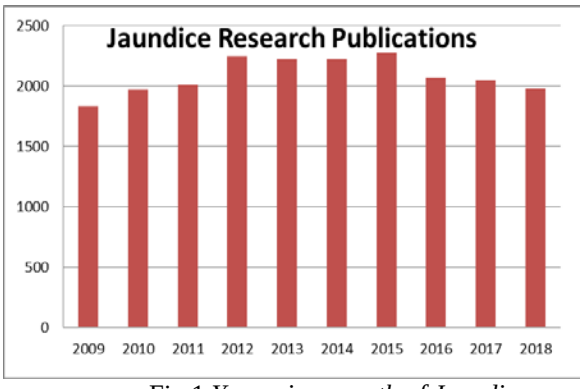

Fig.1 *Year wise growth of Jaundice Research Publications*

Table 1 and figure1 show that the year wise growth of Jaundice research publications during the last ten years study period from 2009 to 2018 from the Scopus database with a total number of 20885 research publications. From the study, it is identified

that a maximum number of 2275 (10.89%) research publications in the year 2015, followed by 2248 (10.76%) research publications in the year 2012, 2221 (10.63%) research publications in the year 2013. Minimum number of 1837(8.80%) research publications in the year 2009. During the ten year study period, the average research publication per year is 2028.5 %. During the study period, the publications contributions are identified that it is an increasing and decreasing trend in the jaundice research publications

Relative Growth Rate and Doubling Time

Relative Growth Rate (RGR)

The Relative Growth Rate (RGR) counted the increase in the number of articles/pages per unit of time, Mahapatra, M. (1985)[8]. The mean Relative Growth Rate R(a) and Doubling time are calculated over the specific period of the interval by the following formula.

$$R(a) = (W_2-W_1)/(T_2-T_1)$$

Where,

R (a) = Mean relative growth rate over the specific period of the interval

W_1 = Log w_1 (Natural log of the initial number of publications/pages)

W_2 = Log w_2 (Natural log of ending number of publications/pages);

T_2-T_1= Unit difference between the initial time and final time.

Doubling Time (Dt)

A direct correspondence has occurred between the relative growth rate and the doubling time. The number of articles of subjects doubled within a period is called doubling time. The natural logarithm has been used to calculate the difference value of 0.693. During the period the corresponding doubling time for each specific period of the interval can be calculated by the following formula.

Dt =0.693/R (a)

The Relative Growth Rate (RGR) and Doubling Time of Jaundice research publications have been calculated and the same is shown in Table 2.

Table 2: Relative Growth Rate and Doubling Time of Publications

Sl.No	Year	Publications	Cum. Publications	W_1	W_2	RGR= (W_2-W_1)	Dt= (0.693/RGR)
1	2009	1837	1837		7.52		
2	2010	1971	3808	7.52	8.24	0.73	0.95
3	2011	2013	5821	8.24	8.67	0.42	1.63
4	2012	2248	8069	8.67	9.00	0.33	2.12
5	2013	2221	10290	9.00	9.24	0.24	2.85
6	2014	2220	12510	9.24	9.43	0.20	3.55
7	2015	2275	14785	9.43	9.60	0.17	4.15
8	2016	2071	16856	9.60	9.73	0.13	5.29
9	2017	2053	18909	9.73	9.85	0.11	6.03
10	2018	1976	20885	9.85	9.95	0.10	6.97
Total		**20885**					

Table 2 shows that the relative growth rate and doubling time of jaundice research publications. From the study period, it is identified that relative growth rate is 0.73 in the year 2010 and 0.10 in the year 2018. At the same time doubling time is identified that 0.95 in the year 2010 and 6.97 in the year 2018. Show that, this study conforms to the relative growth rate is decreasing trend and doubling time is increasing trend in the field of Jaundice research publications during the selected ten year study period.

Top 10 Author's wise contributions

Table 3.:Top 10 author's wise contributions

Sl. No	Authors	Country	Publi-cations	%	Rank
1	Rahmatullah M	Bangla desh	45	11.87	1
2	Itoi T	Japan	44	11.61	2
3	Kamisawa T	Japan	42	11.08	3
4	Isayama H	Japan	38	10.03	4
5	Olusanya B.O	Nigeria	38	10.03	4
6	Bhutani V.K	United States	37	9.76	5
7	Stevenson D.K	United States	36	9.50	6
8	Poovorawan Y	Thailand	35	9.23	7
9	Okazaki K	Japan	33	8.71	8
10	Chari S.T	United States	31	8.18	9
Total			**379**	**100.00**	

Table-3 shows that, top 10 author's contributions in the field of jaundice research publications for the selected ten years study period. It is identified from the table 3, the highest number of top-ranking author is Rahmatullah, M with 45 (11.87%) research publications, followed by 2nd rank author is Itoi. T with 44 (11.61 %) publications, third-ranking author is Kamisawa. T with 42 (11.08 %) publications. Out of Top 10 authors maximum of 4 authors in Japan, 3 authors in the United States and the remaining three authors are three different countries.

Document Type

Table 4: Document Type

Sl.No	Document Type	Publi-cations	%	Cum.	Cum. %
1	Article	15639	74.881	15639	74.88
2	Review	2391	11.448	18030	86.33
3	Letter	1154	5.525	19184	91.86
4	Note	738	3.534	19922	95.39
5	Book Chapter	370	1.772	20292	97.16
6	Conference Paper	206	0.986	20498	98.15
7	Editorial	182	0.871	20680	99.02
8	Short Survey	159	0.761	20839	99.78
9	Erratum	16	0.077	20855	99.86
10	Book	8	0.038	20863	99.89
11	Conference Review	4	0.019	20867	99.91
12	Retracted	2	0.010	20869	99.92
13	Data Paper	1	0.005	20870	99.93
14	Undefined	15	0.072	20885	100.00
Total Publications		**20885**	**100**		

Table 4 shows the document type of Jaundice research publications during the ten year study period. From the study it is identified that, a maximum of 15639 (74.881%) research publications are contributed by articles, followed by 2391 (11.448%) publications are reviews, 1154 (5.525%) publications are letters. From the study, it is identified that top three documents like article, review and letters are contributed more than 90% of total publications.

Top 10 Country-wise distributions

During the study period, country-wise research publications in the field of jaundice research publications are shown in table 5.

Table 5: Country-wise distributions

Sl.No	Country	Publications	%
1	United States	4038	26.64
2	India	2532	16.70
3	China	1885	12.44
4	Japan	1698	11.20
5	United Kingdom	1395	9.20
6	Italy	909	5.99
7	Turkey	774	5.10
8	Germany	688	4.54
9	France	654	4.32
10	Spain	585	3.86
Total		**15158**	**100**

From Table 5 it is identified that, maximum number of 4038(26.64%) research publications are contributed by the United States, followed by India with 2532(16.70%) publications, China with 1885(12.43%) publications. More than 75% of research publications are contributed to the field of jaundice research by the top 10 countries.

Top 10 Language-wise distributions

Table 6: Language wise distributions

Sl.No	Language	Publications	%
1	English	18855	90.29
2	Chinese	453	2.17
3	Spanish	390	1.87
4	Japanese	315	1.51
5	French	271	1.30
6	Russian	175	0.84
7	German	174	0.83
8	Turkish	102	0.49
9	Portuguese	98	0.47
10	Polish	49	0.23
Total		**20882**	**100.00**

Table 6 shows that language-wise contributions of jaundice research publications during the selected ten years study period. From the study, it is identified that a maximum number of 18855(90.29%) research publications are contributed by the English language. Followed by Chinese language with 453 (2.17%) research publications, Spanish language with 390(1.87%) research publications, etc.

Top 10 Affiliation-wise contributions

Table 7: Affiliation-wise Jaundice research publications

Sl.No	Affiliation	Publications	%
1	Postgraduate Institute of Medical Education & amp; Research, Chandigarh	190	13.58
2	University College London, London, United Kingdom	158	11.29
3	Mayo Clinic, United States	155	11.08
4	Inserm	144	10.29
5	Universidade de Sao Paulo - USP	137	9.79
6	All India Institute of Medical Sciences, New Delhi	132	9.44
7	Harvard Medical School	125	8.93
8	University of California, San Francisco	125	8.93
9	Fudan University	118	8.43
10	AP-HP Assistance Publique - Hopitaux de Paris	115	8.22
Total		**1399**	**100**

Table 7 shows that the top 10 institutions wise contributions in the field of jaundice research publications during the study period. From the study it is identified that maximum of 190(13.58%) research publications are contributed by Postgraduate Institute of Medical education & AMP: research Chandigarh, followed by University College, London, United Kingdom with 158 (11.29%) publications, Mayo Clinic United States with 155(11.08%) publications.

Major Findings

- During the study period, a total number of 20885 research publications are identified. Out of that maximum of 2275(10.89%) research publications are contributed in the year 2015.
- This study identified relative growth rate is 0.73 in the year 2010 and 0.10 in the year 2018. At the same time doubling time is 0.95 in the year 2010 and 6.97 in the year 2018. Show that this study conforms to the relative growth rate is decreasing trend and doubling time is increasing trend.
- The highest number of top-ranking author is Rahmatullah, M with 45(11.87%) research publications, a maximum of 15639(74.881%) research publications are contributed by articles, maximum number of 4038(26.64%) research publications are contributed by United States.
- Maximum numbers of 18855(90.29%) research publications are contributed by the English language, and maximum of 190(13.58%) research publications are contributed by the Postgraduate Institute of Medical Education & AMP: research Chandigarh.

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