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Chronic liver disease (CLD) research in SAARC countries: A scientometric analysis of research output during 1996-2015

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The study focuses on the pattern of literature growth, global publication share and ranking, authorship pattern, collaborative coefficient, productivity and impact of most productive institutions and authors, sources and highly cited articles based on data obtained on chronic liver disease research from Scopus. It is found that SAARC countries together contributed 2312 documents during 1996–2015, which is only about 3.49 % of the global CLD output of 66200 publications. The study further revealed that the amount of literature related to CLD research has considerably increased over the last five years. India is leading among SAARC member countries in terms of publication share, leading institutions and authors. The results of study call for more collaboration among the member countries of SAARC as well as with other leading countries, which will increase both quantity and quality of research in CLD.

Keywords: Chronic Liver Disease (CLD); Scientometrics; CLD Research output; Collaborative coefficient; SAARC countries

Introduction

Chronic liver disease (CLD) occurs throughout the world irrespective of age, sex, region or race. According to WHO, about 46% of global diseases and 59% of the mortality is because of chronic diseases and almost 35 million people in the world die of chronic diseases[1,2]. Liver disease rates have been steadily increasing over the years. It is an "important cause of death worldwide, and is very prevalent in Asian countries"[3]. With the globally increasing prevalence, CLD has becomes one of the core areas of research among scholars at global as well as from SAARC countries.

Scientometric analysis of literature provides a snap-shot of the research trends in the field concerned. The present study analyzes the publication trends of the scientific literature on CLD from eight SAARC countries namely Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka by applying scientometric indicators.

Review of literature

Garg et al.[4] evaluated malaria vaccine research carried out in different parts of the world during 1972–2004 using different bibliometric indicators. The study examined the growth pattern of research output, its geographical distribution, profile of different countries in different subfields and pattern of citations using Google Scholar. Dutt, Kumar and Garg[5] evaluated the research output in global dengue research by analyzing 2566 papers published during 1987 to 2008 and indexed by Science Citation Index. The results revealed the gradual rise in the quantum of output. Gupta, Kaur & Kshitij[6] studied dementia research output from India during 2002-11 using Scopus citation database on different parameters including the growth, global publications share, citation impact, share of international collaborative papers, contribution of major collaborative partner countries, contribution of various subject fields and by type of dementia, productivity and impact of most

productive institutions and authors and patterns of research communication in most productive journals.

Gupta, Bala & Kshitij[7] analyzed the global publications output on cataract research during 2002-11 and found that the world publication output in cataract research consisted of 27053 papers during 2002-11, which increased from 2025 papers in 2002 to 3080 papers in 2011, witnessing an annual average growth rate of 4.89%. The average citation impact per paper registered by world publications was 6.94 during 2002-11, which decreased from 7.82 during 2002-06 to 5.21 during 2007-11.

Gupta et al[8] analysed the Indian publications output in glaucoma research during 2002-11 and found the Indian publications output in glaucoma research (1078 papers) during 2002-11 increased from 61 papers in 2002 to 207 papers in 2011, witnessing an annual average growth rate of 18.29 %. The average citation impact per paper registered by Indian publications in glaucoma research was 3.03 during 2002-11, which decreased from 3.87 during 2002-06 to 2.49 during 2007-11.

Bhardwaj[9] evaluated the global publication output on dengue during 2001-12 using data obtained from Scopus. The study revealed that there were 9618 publications within the period under study. During the period 2001-12, annual growth rate was 13.4 percent, compared to 14.31 percent in the period 2001-2006, and 12.48 percent in 2007-2012. Bhardwaj[10] analyzed India's contributions to the research literature on dengue and found that India has one of the most prominent records in the world in terms of output of dengue articles and citations to them. Indians are frequently research collaborators with scientists from other countries affected by the disease, with a significant number of the resulting articles being published in Indian journals and subsequently well cited.

Sachithanantham and Raja[11] analyzed the Indian research output in rabies, one of the most vulnerable zoonotic disease in India. The literature growth, India's contribution compared to the world literature output, prolific authors and their collaborative pattern, journal distribution, most productive institution and geographical distribution are discussed in the study. Eom et al[12] analyzed the research output of selected Asian countries in the field of total knee arthroplasty (TKA). The study reported that Asian surgeons have increasingly contributed to orthopedic literature on TKA, but the dominant contribution came from only a few countries.

Zhang et al[13] systematically analysed the global research output on nonalcoholic fatty liver disease (NAFLD). The study reported that the publication on NAFLD grew slowly and entered into a highly developing period in the 21st century, especially in the last decade. Djalalinia et al[14] analysed the trends of obesity/overweight research outputs of Middle East countries. Jeyshankar and Vellaichamy[15] analysed the global literature on autism indexed in Scopus database during 2007-11. Results showed that totally 70 countries contributed to the literature and majority of the papers were from USA (49.24%), followed by United Kingdom (15.61%), Germany (4.93%) etc. India ranked 17th among the other countries in autism research with a global publications share of 1.01% during 2007-11.

Sa'ed[16] presented the bibliometric analysis of dengue research output in Arab countries based on Scopus database. The results show that the study of dengue exhibits an overall upward trend from 1872 to 2015 with peak publications in 2014.

The review of literature reveals that there are no scientometric studies on chronic liver disease and the present study is an effort to examine the scientometrics of this important disease.

Objectives of the study

- To examine the authorship pattern and to measure the strength of collaborative research using collaborative coefficient (CC);
- To identify the distribution of subject categories on CLD research;
- To identify the preferred sources for publication;
- To identify the most prolific institutions and authors in the field of CLD research from SAARC countries; and
- To identify the highly cited papers in the field of CLD research.

Methodology

This scientometric study is based on publications in chronic liver disease from 1996 to 2015 authored and co-authored by scientists of 8 SAARC countries. The

data were extracted from Elsevier's Scopus database[17]. A basic search strategy was first used to locate chronic liver disease related publications. An additional filter was set according to the affiliation country to include only the publications published by the 8 SAARC countries.

All document types including article, review, conference paper, short survey, note, editorial, letter, book chapter and article in press were included. The citation information (author name, document title, publication year, source title, citation count, source, document type) and bibliographical information (affiliations) of these publications were then extracted from Scopus and saved as csv files. The csv files were exported to Microsoft Excel 2007 and used for further analysis. Descriptive statistics were used to determine the frequency, percentage, sum, and average. The scientometric indicators such as citation count, citation per paper (CPP), Collaborative Coefficient (CC) and h-index have been used to assess the quantity and impact of research output emanated from the said SAARC countries.

Analysis

Research output and growth trend

The global publication output on CLD cumulated to 66200 documents in 20 years during 1996-2015. It was observed that SAARC countries contributed only 2312 documents during 1996–2015, which is about 3.49% of the global output in CLD. The growth trend of CLD research output of SAARC countries and the world is presented in Figure 1. It is to be noted that the comparison of SAARC research output with world output does not reveal an encouraging growth during the period 1996 to 2010. However, the growth trend of the recent five years (2011-2015) between SAARC countries and world output is almost similar. An exponential growth in number of publications is seen in 2014.

Global publication share and ranking

Table 1 shows the global publication share of top 10 most productive countries in CLD research and the relative position of SAARC countries with different scientometric indicators such as total number of publications, citations received, citations per paper and *h*-index. These most productive countries cumulatively contributed 52286 publications on CLD during 1996-2015 accounting for 78.98% global share. The publication share varies from 0.003% to 27.563% publications. The United States accounted for the largest publication share (27.56%), followed by Italy (8.22%), Japan (7.92%), Germany (6.86%), UK (6.81%), China (5.42%) and so on. SAARC countries cumulatively contributed 2312 publications

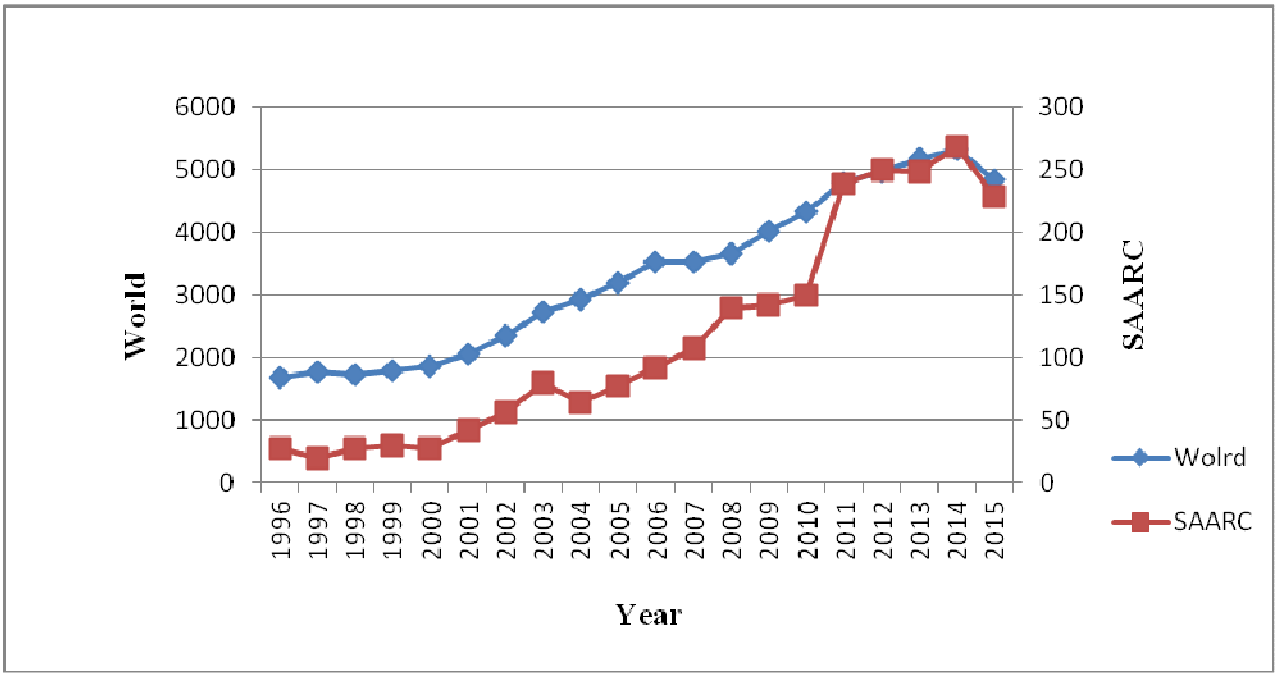

Fig. 1—Growth trend of total CLD publications of SAARC countries and the World

accounting 3.49% of global share. Among SAARC countries, only India figures in the top 10 countries. Other SAARC countries are placed from 28th to 144th rank. It is also observed that the two countries Bhutan and Maldives don't have any publications.

With regard to citations, United States topped in the list with 724204 citations followed by Italy with 175087, UK with 162621 and so on. Among SAARC countries India topped the list with 28181 followed by Pakistan with 5646, Sri Lanka with 4775 and so on. In terms of CPP, the SAARC countries topped the list. Sri Lanka came first with an average of 170.54 followed by Afghanistan 167.50 and Nepal 142.50. The high rate of CPP is due to the collaboration from these countries in the highly cited articles. United States has the highest h-index of 304 followed by France 175, and both Italy and Germany with 166 each. Among SAARC countries, India had the highest *h*-index of 70 followed by Pakistan 31, Bangladesh 11 and so on.

SAARC countries contributions in CLD research and its growth

The distribution of SAARC countries contributions related to CLD literature during 1996-2015 is shown in Table 2. It was observed that the number of documents on CLD published by the researchers from SAARC member countries increased from 27 documents in 1996 to 228 documents in 2015, witnessing the growth rate of 39.52%. As stated earlier the growth rate increased during the last five years. With respect to the country-wise contributions, India produced 80% of the total SAARC output followed by Pakistan (17.258%), Bangladesh (2.465%) and so on.

Document types

The document type distribution of SAARC countries contribution on CLD literature during 1996-2015 is shown Table 3. Among the nine document types, about 72% (1661) were articles followed by reviews (18.69%), letters (3.24%), and conference papers (2.90%). Other document types such as editorial materials, book chapters, short surveys, notes, and article in press covered approximately (3.33%) of the published literature. It is also observed from the Table 3 that the document type article received highest number of citations i.e., 22340, followed by reviews 7314, conference papers 1379 and so on. With regard to average citations per paper, short surveys has the highest average with 24.19 followed by conference papers with 20.58, reviews 16.53 and articles 13.45 and so on. The article achieved highest *h*-index 61 followed by reviews 47, conference papers 14 and so on.

Authorship pattern and collaborative coefficient (CC)

Table 4 presents data about authorship pattern in the documents related to CLD research originated from SAARC countries. It indicate that 76% percent

Table 1—Publication output and share of top ten countries in CLD research
(Top 10 & SAARC countries)

Rank	Country	Publications	Percent	Citations	Citations per paper	*h*-index
1	USA	18247	27.563	724204	39.69	304
2	Italy	5440	8.218	175087	32.19	166
3	Japan	5241	7.917	125946	24.03	133
4	Germany	4542	6.861	159196	35.05	166
5	UK	4514	6.819	162621	36.03	162
6	China	3588	5.420	57011	15.89	88
7	France	3528	5.329	155149	43.98	175
8	Spain	2868	4.332	86647	30.21	132
9	Canada	1976	2.985	84155	42.59	131
10	India	1828	2.761	28181	15.42	70
28	Pakistan	399	0.603	5646	14.15	31
55	Bangladesh	57	0.086	1005	17.63	11
69	Sri Lanka	28	0.042	4775	170.54	8
70	Nepal	28	0.042	3990	142.50	8
144	Afghanistan	2	0.003	335	167.50	2
	Total	52286	78.98			

Table 2— Distribution of SAARC countries contributions related to CLD literature during 1996-2015

Year	Afghanistan	Bangladesh	India	Nepal	Pakistan	Sri Lanka	Total SAARC
1996	0	1	21	1	4	0	27
1997	0	2	14	1	3	0	20
1998	0	0	23	0	4	0	27
1999	0	0	26	0	4	0	30
2000	0	1	23	1	3	0	27
2001	0	0	36	0	6	0	42
2002	0	1	47	1	7	0	56
2003	0	2	68	0	10	0	80
2004	0	1	44	0	19	0	64
2005	0	1	64	1	12	0	77
2006	0	1	78	2	10	1	92
2007	0	2	84	3	17	1	107
2008	0	4	106	1	28	1	140
2009	0	4	103	3	32	3	142
2010	0	4	114	1	32	1	149
2011	0	8	182	1	46	4	238
2012	0	5	200	5	44	3	250
2013	0	5	192	3	46	2	248
2014	0	7	216	1	44	3	268
2015	2	8	187	3	28	9	228
Total	2	57	1828	28	399	28	2312
% of 2312	0.087	2.465	79.066	1.211	17.258	1.211	100

Table 3—Document types of CLD research output in SAARC countries with scientometric indicators

Document type	Number	Percent	Citations	Citations per paper	h-index
Article	1661	71.84	22340	13.45	61
Review	432	18.69	7314	16.93	47
Letter	75	3.24	158	2.11	7
Conference Paper	67	2.90	1379	20.58	14
Editorial	30	1.30	88	2.93	4
Book Chapter	16	0.69	11	0.69	2
Short Survey	16	0.69	387	24.19	5
Note	13	0.56	53	4.08	4
Article in Press	2	0.09	0	0.00	0
Total	2312	100	31730	0.07	74

Table 4—Authorship pattern

No. of authors	No. of Papers	Percent
Single	168	7.27
Two	390	16.87
Three	406	17.56
Four	405	17.52
Five	301	13.02
Six	222	9.60
Seven	137	5.93
Eight	79	3.42
Nine	62	2.68
Ten and above	142	6.14
Total	2312	100

of the papers were published by multi-authors (3 and above).

Collaborative coefficient (CC), suggested by Ajiferuke[18] has been used to measure the extent and strength of collaboration among the researchers in SAARC countries in the CLD discipline. It can be expressed mathematically as:

$$\mathbf{CC} = 1 - \frac{\sum_{J=1}^{J=k} (1/J)Fj}{N}$$

where,

fj is the number of *J* authored papers published in a discipline during a certain period of time

N is the total number of research papers published in a discipline during a certain period of time and *k* is the greatest number of authors per paper in a discipline.

According to Ajiferuke, CC tends to zero as single authored papers dominate and to 1-1/j as j-authored papers dominate. This implies that higher the value of CC, higher the probability of multi or mega-authored papers.

CC from SAARC countries on CLD has been calculated and presented in Table 5. It shows that CC value is 0.62 in 1996 and 0.72 in 2015. The average CC value is 0.68 during 1996 -2015. The gradually increasing values of CC suggest that over the period more emphasis on collaborative research.

Table 5—Collaborative coefficient of article authors according to year

Years	Collaborative coefficients (CC)	Years	Collaborative coefficients (CC)
1996	0.62	2006	0.70
1997	0.60	2007	0.65
1998	0.62	2008	0.68
1999	0.56	2009	0.66
2000	0.68	2010	0.68
2001	0.67	2011	0.68
2002	0.60	2012	0.69
2003	0.61	2013	0.66
2004	0.69	2014	0.71
2005	0.67	2015	0.72
	Average		0.68

Subject category-wise research output

Based on Scopus subject categories, SAARC CLD research spanned 23 subject categories. The top 10 most productive categories are medicine (79.54 %), biochemistry, genetics and molecular biology (17.91%), pharmacology, toxicology and pharmaceutics (16.31%), immunology and microbiology (7.31%), agricultural and biological sciences (3.68%), environmental science (2.38 %), chemistry (1.56%), neuroscience (1.43 %), nursing (1.38 %) and veterinary (0.87 %).

Preferred journals

The 2312 articles from SAARC countries on CLD were published in 755 journals, 9 conference proceedings and 13 books. The list of top 10 sources preferred by researchers from SAARC countries is given in Table 6. *Indian Journal of Gastroenterology* is the top journal with 75 publications followed by *Journal of the College of Physicians and Surgeons Pakistan* (71), *Journal of Gastroenterology and Hepatology Australia* (58) and *Journal of Clinical and Experimental Hepatology* (50). The rest of the journals each have published less than 50 articles during the period of study.

In terms of impact factor (IF), 6 out of top 10 journals have IF (JCR 2015) and remaining four do not have IF. Of these World *Journal of Gastroenterology* has the highest IF of 2.787. *Indian Journal of Medical Research* has IF 1.446, and *Hepatology International* has IF of 1.125. Remaining three journals have IF below one (Table 6).

Prolific institutions

The top 15 most productive institutions with more than 20 publications along with scientometric indicators are given in Table 7. These fifteen institutions contributed 837 papers with an average of 55.8 % papers per institution (Table 7). Postgraduate Institute of Medical Education and Research, Chandigarh (India) published the most number of 138 paper and has h-index 22, followed by All India Institute of Medical Sciences, New Delhi with 114 documents, more number of citations (5715) and h-index value (24).

In terms of citations per paper, Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow, India has the highest CPP 60.81 followed by AIIMS, New Delhi, India (50.13), Institute of Post Graduate Medical Education and Research Kolkatta, India (28.80 CPP), GBPIPMER,

Table 6—Top 10 publication sources

Journals	Publisher/Country	Number of articles	%share	IF 2015
Indian Journal of Gastroenterology	Indian Society of Gastroenterology /India	75	3.24	-
Journal of the College of Physicians and Surgeons Pakistan	College of Physicians and Surgeons/Pakistan	71	3.07	0.343
Journal of Gastroenterology and Hepatology	Wiley-Blackwell/ Australia	58	2.51	-
Journal of Clinical and Experimental Hepatology	Elsevier /India	50	2.16	-
Journal of the Pakistan Medical Association	Pakistan Medical Association /Pakistan	47	2.03	0.488
Journal of Association of Physicians of India	Association of Physicians of India /India	33	1.43	-
Journal of Clinical and Diagnostic Research (OA)	JCDR Research and Publications /India	33	1.43	-
Indian Journal of Medical Research	Indian Council of Medical Research /India	32	1.38	1.446
Hepatology International	Springer /USA	32	1.38	1.125
International Journal of Pharma and Bio Sciences (OA)	IJPBS/India	23	0.99	-
Indian Journal of Pathology and Microbiology (OA)	Medknow Publications /India	22	0.95	-
World Journal of Gastroenterology (OA)	WJG Press /USA	22	0.95	2.787
Indian Journal of Pediatrics	Springer /India	21	0.91	0.808
International Journal of Pharmaceutical Sciences Review and Research	Global Research Online /India	21	0.91	-

Table 7—Top 15 most productive institutes with scientometric indicators

Institution	Publications	Percent	Citations	Citations per paper	h-index
Postgraduate Institute of Medical Education and Research, Chandigarh, India	138	5.97	2131	15.44	22
All India Institute of Medical Sciences, New Delhi, India	114	4.93	5715	50.13	24
G.B. Pant Hospital (GBPIPMER), New Delhi, India	89	3.85	2410	27.08	27
Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow, India	83	3.59	5047	60.81	19
Christian Medical College, Vellore, India	66	2.85	694	10.52	13
The Aga Khan University Hospital, Karachi, Pakistan	64	2.77	1404	21.94	14
Maulana Azad Medical College, New Delhi, India	52	2.25	580	11.15	12
Institute of Liver and Biliary Sciences, New Delhi, India	37	1.60	760	20.54	11
Sir Ganga Ram Hospital, New Delhi, India	32	1.38	143	4.47	7
Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh	31	1.34	474	15.29	7
University of the Punjab, Lahore, Pakistan	30	1.30	642	21.40	11
Indian Council of Medical Research, New Delhi, India	27	1.17	409	15.15	12
Indraprastha Apollo Hospitals, New Delhi, India	25	1.08	116	4.64	6
Institute of Post Graduate Medical Education and Research Kolkatta, India	25	1.08	720	28.80	11
King Edward Memorial Hospital, Mumbai, India	24	1.04	370	15.42	10

New Delhi, India (27.08 CPP), Aga Khan University Hospital, Karachi, Pakistan (21.94 CPP) and so on.

Prolific authors

Table 8 shows the 15 most productive authors along with their affiliation, number of publications, citations, average citations per paper and *h*-index values.

The top 15 most productive authors altogether contributed 462 documents, accounting for 19.98% of cumulative publications. Among these 15 authors, majority (13) were from India, rest 2 were from Pakistan. The three most productive authors are Sarin SK from GB Pant Hospital (GBPIPMER) & Institute of Liver and Biliary Sciences, New Delhi, India, Chawla YK and Dhiman RK from Postgraduate

Table 8—Productivity & citation impact of fifteen most productive SAARC authors in CLD research

Sl. no.	Name	Affiliation	Publications	Citations	Citations per paper	*h*-index
1	Sarin, S.K.	G.B. Pant Hospital (GBPIPMER) & Institute of Liver and Biliary Sciences, Department of Hepatology, New Delhi, India	107	2857	26.70	27
2	Chawla, Y.K.	Postgraduate Institute of Medical Education and Research, Chandigarh India	50	1047	20.94	15
3	Dhiman, R.K.	Postgraduate Institute of Medical Education and Research, Chandigarh India	31	519	16.74	12
4	Kar, P.	Maulana Azad Medical College, Department of Medicine, New Delhi, India	29	335	11.55	10
5	Kumar, A.	Sir Ganga Ram Hospital, Department of Gastroenterology and Hepatology, New Delhi, India	27	803	29.74	12
6	Sakhuja, P.	G.B. Pant Hospital (GBPIPMER), New Delhi, India	24	894	37.25	12
7	Amarapurkar, D.	Bombay Hospital and Medical Research Centre, Mumbai, India	24	1263	52.625	13
8	Jafri, W.	The Aga Khan University, Karachi, Pakistan	23	902	39.22	12
9	Acharya, S.K.	Institute of Medical Sciences, Department of Gastroenterology, Boranada, Jodhpur, India	23	517	22.48	13
10	Aggarwal, R.	Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow, India	23	4438	192.96	12
11	Hamid, S.	The Aga Khan University, Section of Gastroenterology, Karachi, Pakistan	23	985	42.83	13
12	Sharma, B.C.	G.B. Pant Hospital (GBPIPMER), Department of Gastroenterology, New Delhi, India	22	1010	45.91	14
13	Guptan, R.C.	G.B. Pant Hospital (GBPIPMER), Department of Gastroenterology, New Delhi, India	19	685	36.05	12
14	Rastogi, A.	Institute of Liver and Biliary Sciences, Department of Pathology, New Delhi, India	19	539	28.37	11
15	Duseja, A.	Postgraduate Institute of Medical Education and Research, Department of Hepatology, Chandigarh, India	18	214	11.89	7

Institute of Medical Education and Research, Chandigarh, India, with 107, 50 and 31 documents respectively (Table 8).

Considering the total citations and average citations, Aggarwal R from Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow, India has 4438 citations with an average of 192.96 citations per paper. Sarin SK from G.B. Pant Hospital (GBPIPMER) & Institute of Liver and Biliary Sciences, New Delhi had the highest h-index of 27 followed by Chawla YK from Postgraduate Institute of Medical Education and Research, Chandigarh, India with an h-index of 15 and so on.

Highly cited papers

Top ten highly cited papers are shown in Table 9. Among the top most cited papers, 4 out 10 are published *Lancet* and two in *Hepatology International*. Lozano et al's 2012 paper "Global and regional mortality from 235 causes of death for 20 age groups in 1990 and 2010: A systematic analysis for the Global Burden of Disease Study 2010" is the most highly cited paper with 2543 citations, followed by Vos, Theo et al 2013 paper with 1280 citations. Lozano et al's *Lancet* paper has 188 authors which could also be contributing factor for its high citations.

Conclusion

CLD is one of the major health hazards found in SAARC countries as well as other countries in the world due to its high morbidity and mortality rate. Even though millions of people living in SAARC countries suffer from CLD, it is quite discouraging that the share of research contributions from these

Table 9—Top 10 most cited articles in Scopus related to CLD from SAARC countries

Sl. no.	Paper	Citations
1	Lozano, R., M. Naghavi, K. Foreman, S. Lim, K. Shibuya, V. Aboyans, J. Abraham, et al., Global and regional mortality from 235 causes of death for 20 age groups in 1990 and 2010: A systematic analysis for the global burden of disease study 2010, *Lancet*, 380 (9859) (2012) 2095-2128.	2543
2	Vos, Theo, Abraham D. Flaxman, Mohsen Naghavi, Rafael Lozano, Catherine Michaud, Majid Ezzati, Kenji Shibuya et al., Years lived with disability (YLDs) for 1160 sequelae of 289 diseases and injuries 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010,*Lancet,* 380 (9859) (2013)2163-2196.	1280
3	Simonneau, G., M. A. Gatzoulis, I. Adatia, D. Celermajer, C. Denton, A. Ghofrani, M. A. Gomez Sanchez, et al., Updated clinical classification of pulmonary hypertension, *Journal of the American College of Cardiology*, 62 (25 SUPPL.) (2013) D34-D41.	516
4	Anand, Preetha, Sherin G. Thomas, Ajaikumar B. Kunnumakkara, Chitra Sundaram, Kuzhuvelil B. Harikumar, Bokyung Sung, Sheeja T. Tharakan et al., Biological activities of curcumin and its analogues (Congeners) made by man and Mother Nature, Biochemical pharmacology, 76 (11) (2008) 1590-1611.	476
5	Liaw, Yun-Fan, Jia-Horng Kao, Teerha Piratvisuth, Henry Lik Yuen Chan, Rong-Nan Chien, Chun-Jen Liu, Ed Gane et al. Asian-Pacific consensus statement on the management of chronic hepatitis B: a 2012 update, *Hepatology International*, 6, (3)(2012) 531-561.	342
6	Sarin, Shiv Kumar, Ashish Kumar, John A. Almeida, Yogesh Kumar Chawla, Sheung Tat Fan, Hitendra Garg, H. Janaka de Silva et al, Acute-on-chronic liver failure: consensus recommendations of the Asian Pacific Association for the study of the liver (APASL), *Hepatology International*, 3(1) (2009) 269-282.	338
7	Connolly, Stuart J., A. John Camm, Jonathan L. Halperin, Campbell Joyner, Marco Alings, John Amerena, Dan Atar et al. Dronedarone in high-risk permanent atrial fibrillation, *New England Journal of Medicine*, 365 (24)(2011) 2268-2276.	315
8	Wu, Huaizhu, Sudip Ghosh, Xiaoyuan Dai Perrard, Lili Feng, Gabriela E. Garcia, Jerry L. Perrard, John F. Sweeney et al. T-cell accumulation and regulated on activation, normal T cell expressed and secreted upregulation in adipose tissue in obesity, *Circulation*, 115 (8) (2007) 1029-1038.	314
9	Naghavi, Mohsen, Haidong Wang, Rafael Lozano, Adrian Davis, Xiaofeng Liang, Maigeng Zhou, Stein Emil Vollset et al. Global, regional, and national age-sex specific all-cause and cause-specific mortality for 240 causes of death, 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013, *Lancet*, 385 (9963) (2015) 117-171.	302
10	Gajalakshmi, Vendhan, Richard Peto, Thanjavur Santhanakrishna Kanaka, and Prabhat Jha. Smoking and mortality from tuberculosis and other diseases in India: retrospective study of 43 000 adult male deaths and 35 000 controls, *Lancet*, 362 (9383) (2003) 507-515.	271

countries to the global research output on this disease is found to be very meager. It is true that the research contribution of scientists in any field including medical sciences should influence the society in order to create awareness, sensitize and enhance the standard of living of the people in society by protecting them from fatal diseases. It is evident from the study that the research contribution made by the scientists of CLD in SAARC region is not on par with the other regions of the world though it is an essential requirement for the researchers to lay due emphasis on CLD due to its impact on SAARC region. So, it is need of the hour to concentrate on CLD research both quantitatively and qualitatively. However it is suggested that funding agencies and government organizations in the SAARC region should not only encourage the research institutions to promote CLD research but also to formulate policies to foster the research in order to prevent and cure people of this most vulnerable disease. Further, there is also need to increase research collaboration among member countries of SAARC as well as with other leading countries across the globe, which will increase the quality of research in CLD. Therefore, it is concluded that the present study conducted is a milestone and an eye opener to realize the status of SAARC region as far as the CLD research is concerned.

References

1. Murray C J and Lopez A D, Evidence-based health policy – lessons from the Burden of Disease Study, Science, 274 (1996) 740-743.

2. Sarin S K and Rakhi M, Global burden of liver disease: A True Burden on Health Sciences and Economies, Available at http://www.worldgastroenterology.org/publications/e-wg-n/e-wgn-expert-point-of-view-articles-collection/global-bur-

den-of-liver-disease-a-true-burden-on-health-sciences-and-economies (Accessed on 01 July 2016).

3. Lee S S, Byoun Y S, Jeong, S H et al, Type and cause of liver disease in Korea: single-center experience, 2005-2010, *Clinical and Molecular Hepatology*, 18(3) (2012) 309–315. Available at http://doi.org/10.3350/cmh.2012.18.3.309. (Accessed on 01 July 2016).
4. Garg K C, Kumar S, Madhavi,Y and Bahl M, Bibliometrics of global malaria vaccine research, *Health Information & Libraries Journal*, 26(1) (2009) 22. Available at http://onlinelibrary.wiley.com/doi/10.1111/j.1471-1842.2008.-00779.x/pdf (Accessed on 01 July 2016).
5. Dutt B, Kumar S and Garg K C, Scientometric profile of global dengue research, *COLLNET Journal of Scientometrics & Information Management*, 4(1) (2010) 81.
6. Gupta B M, Kaur H and Kshitig A, Dementia research in India: A scientometric analysis of research output during 2002-11. *Annals of Library & Information Studies*, 59(4) (2012) 280-288.
7. Gupta B M, Bala A and Kshitig A, World cataract research: A scientometric analysis of publications output during 2002-11, *Library Philosophy & Practice,* (2013) 1-17.
8. Gupta R., Gupta B M, Kshitij A and Bala A, Glaucoma research: A scientometric study of indian publications output, 2002-11, *DESIDOC Journal of Library & Information Technology*, 34(1) (2014) 35-45.
9. Bhardwaj R K, Dengue research: A scientometric mapping of world publications, *SRELS Journal of Information Management*, 51(2) (2014) 77-86.
10. Bhardwaj R K, Dengue fever: A bibliometric analysis of india's contributions to the research literature of this dangerous tropical disease, *Science & Technology Libraries*, 33(3) (2014) 289. Available at http://doi:10.1080/-0194262X.2014.943117 (Accessed on 01 July 2016).
11. Sachithanantham S and Raja S, Scientometric analysis of rabies research literature in India: 1950-2014, *Scientometrics*, 105(1) (2015) 567-575. Available at http://link.springer.-com/article/10.1007%2Fs11192-015-1694-3. (Accessed on 01 July 2016).
12. Eom S H, Bamne A B, Chowdhry M, Chae I S and Kim T K, Bibliometric analysis of orthopedic literature on total knee arthroplasty in asian countries: A 10-year analysis, *Knee surgery & related research*, 27(3) (2015) 149-155.
13. Zhang T S, Qin H L, Wang T et al, Global publication trends and research hotspots of nonalcoholic fatty liver disease: A bibliometric analysis and systematic review, *SpringerPlus*, 4 (2015) 776. Available at http://www.ncbi.nlm.nih.gov/pub-med/26697286. (Accessed on 01 July 2016).
14. Djalalinia S, Peykari N, Qorbani, M et al, Obesity researches over the past 24 years: A scientometrics study in middle east countries, *International journal of preventive medicine*, 6 (2015) 38. Available at https://www.ncbi.nlm.nih.gov/pmc/-articles/PMC4434496/ (Accessed on 02 July 2016).
15. Jeyshankar R. and Vellaichamy A, Scientometric analysis of autism research output during 2007-2011, *SRELS Journal Of Information Management*, 53(1) (2016) 55-63.
16. Sa'ed H Z, Dengue research: A bibliometric analysis of worldwide and Arab publications during 1872–2015. *Virology journal*, 13 (2016) 78. Available at https://viro-logyj.biomedcentral.com/articles/10.1186/s12985-016-0534-2 (Accessed on 02 July 2016).
17. Elsevier Scopus, Available at http://www.scopus.com/. (Accessed on 01 July 2016).
18. Ajiferuke I, Burell Q and Tague J, Collaborative coefficient: A single measure of the degree of collaboration in research, *Scientometrics*, 14(5-6) (1988) 421-433.