Online Submissions: wjg.wjgnet.com
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doi:10.3748/wjg.15.4471

World J Gastroenterol 2009 September 21; 15(35): 4471-4475
World Journal of Gastroenterology ISSN 1007-9327

Papers featured in the *World Journal of Gastroenterology* from 2006 to 2007

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Received: June 23, 2009 Revised: August 26, 2009
Accepted: September 3, 2009
Published online: September 21, 2009

Abstract

AIM: To analyze papers published in the *World Journal of Gastroenterology* (*WJG*) from 2006 to 2007. We investigated the highly cited papers for geographic distribution of the cited authors, as well as the distribution of the citing journals and year of citation.

METHODS: Papers published in *WJG* from 2006 to 2007 and their citations were retrieved from the Science Citation Index Expanded (SCIE). The papers and their citations were analyzed according to bibliometric methods, including the number of citations for a given paper, the distribution of the highly cited papers, the geographic distribution of the cited authors, and the years of citation.

RESULTS: Two thousand five hundred and six papers published in *WJG* from 2006 to 2007 were collected through SCIE, and 2335 of these were categorized as articles, reviews or proceedings. In 2006 and 2007, the average citation rate was 85.08% and 70.48%, respectively, and the average number of citations per paper was 4.33 and 2.51. Among the 2506 papers, 1963 were cited 8788 times by other articles. The mean number of citations per paper was 3.51. The papers with over three citations accounted for 54.72% of all those that were cited, and the total number of citations accounted for 85.38% of the total of 8788 citations. Thirteen papers were cited over 30 times and the highest number of citations for any one paper was 98. The cited authors came from 70 different countries or regions, with China, Japan and the United States being the most frequent. The highest average citation rate and number of citations per paper were for authors from Canada (96.30%, 6.89), Hungary (92.31%, 5.62), Australia (88.46%, 5.46), Germany (87.04%, 5.33), and Spain (87.50%, 5.11). The impact factor was 2.081 and the self-citation rate was 9.41% in 2008. The papers published in *WJG* in 2006-2007 were cited by 1597 journals.

CONCLUSION: The papers in *WJG* have a high number of citations, and have been cited in numerous journals by authors from various countries. The results imply that *WJG* has an influential academic profile in gastroenterology around the world.

Key words: Citation analysis; Bibliometrics; *World Journal of Gastroenterology*

Peer reviewer: Sheng-Li Ren, PhD, Department of Publication, National Natural Science Foundation of China, Beijing 100085, China

Yang H, Zhang JH, Zhang F. Papers featured in the *World Journal of Gastroenterology* from 2006 to 2007. *World J Gastroenterol* 2009; 15(35): 4471-4475 Available from: URL: http://www.wjgnet.com/1007-9327/15/4471.asp DOI: http://dx.doi.org/10.3748/wjg.15.4471

INTRODUCTION

In the natural sciences, especially in basic and life sciences, journals have never attracted more attention. The content and academic quality of journals is emphasized, and the academic profile of a journal can be evaluated through citation analysis of a given journal's papers, as well as the journal impact factor. The pertinent indexes for evaluating a scientific journal involve the publisher of the journal, its academic background, reputation of the authors, the number of times that papers are cited, and the journal impact factor[1]. Some of these indexes may evaluate subjectively the journal impact in a qualitative manner, and some may measure quantitatively the general profile or average level of the

journal papers[2]. The reputation of scientific journals, types of papers in a given journal, the number of papers in a given journal, the citation rate, and the number of times each paper is cited are all essential indicators of the quality of scientific journals.

The current study analyzed several features of papers published in *World Journal of Gastroenterology* (*WJG*), including the citation rate of the published papers, the average number of times a given paper was cited, the geographic distribution of the cited authors, the year of citation, and the distribution of the citing journals so that we can understand the character of *WJG*. The results will be of interest to the editors of *WJG* and its readers.

MATERIALS AND METHODS

The Science Citation Index Expanded (SCIE) is a sophisticated database established by the Institute for Scientific Information[3], and is an essential tool for evaluating papers in renowned journals. The current study analyzed features of papers published in *WJG* with the aid of the search function of the SCIE.

The SCIE was accessed with the Web of Science. SCIE was searched using "World Journal of Gastroenterology" for the publication title and "2006-2007" for publication year. From the papers retrieved, we selected the following information: author(s), title, source, document type, address, cited times and ISSN. The retrieved data were downloaded, saved and managed with the Microsoft Excel.

There were some limitations to the data process: (1) we analyzed only the address of the corresponding author, and not that of all the authors in the paper; and (2) all the papers from *WJG* and their references were retrieved on May 4, 2009.

RESULTS

Outline of papers published in WJG 2006-2007

Two thousand five hundred and six papers were published in *WJG* in 2006-2007, including 1311 papers from the categories of article, review and proceedings in 2006 and 1024 from these categories in 2007. Among these papers, 1963 were cited 8788 times by SCIE. The mean number of citations was 3.51 per paper. The highest number of citations for any one paper was 98. The papers with one citation accounted for 25.11% of the total number of cited papers; those with two, 20.17%; those with three, 54.72%; and those with over three, 85.38% (Table 1). Thirteen papers were cited over 30 times (Table 2).

Citation analysis of papers published in WJG 2006-2007

Among the 2506 papers, nine belonged to the "other" category, which included author's feedback, book reviews, commentaries, editorial announcements, memorials, and news. Within the other 15 categories in *WJG*, viral hepatitis, reviews and editorials had high citation rates of 92.73%, 92.86% and 92.31%, respectively. The highest average number of citations for the top three columns was 8.89 for reviews, 6.43 for editorials, and 6.00 for topic highlights. The citation rates for case reports and letters to the editor were low, at 64.15% and 54.55%, respectively. Their average number of citations was 1.66 and 1.43, respectively, which were far lower than the total citation rate (78.33%) and average number of citations (3.51) (Table 3). In 2006 and 2007, the total citation rate (with the "other" category excluded) was 85.08% and 70.48%, and the total average number of citations was 4.33 and 2.51.

Table 1 Citation frequency of papers published in *WJG* 2006-2007

Cited times	No. of cited articles		No. of cited times	
	Count	Percent (%)	Count	Percent (%)
1	493	25.11	493	5.61
2	396	20.17	792	9.01
3	270	13.75	810	9.22
4	175	8.91	700	7.97
5	160	8.15	800	9.10
6	107	5.45	642	7.31
7	77	3.92	539	6.13
8	56	2.85	448	5.10
9	41	2.09	369	4.20
10	42	2.14	420	4.78
11-20	111	5.65	1720	19.57
21-30	23	1.17	546	6.21
31-40	9	0.46	316	3.60
41-100	3	0.15	193	2.20
Total	1963	100.00	8788	100.00

Geographic distribution of cited authors

The cited authors came from 70 countries. Twenty-nine countries or areas had over 10 cited papers, 11 countries between 5-9 papers, and 29 countries 1-4 papers. China, Japan and the United States were ranked as the top three countries according to the highest total number of citations. The countries with the highest citation rates and average number of citations per paper included Canada (96.30% and 6.89), Hungary (92.31% and 5.62), Australia (88.46% and 5.46), Germany (87.04% and 5.33), and Spain (87.50% and 5.11) (Table 4).

Year of citation for papers published in WJG 2006-2007

The year of citation is shown in Table 5. In 2008, papers published in 2006 and 2007 were cited 3079 and 1780 times, respectively. In 2009, the figures so far are 1101 and 931, respectively. From 2006 to 2009, the self citation rate was 22.16%, 11.33%, 9.41% and 5.01%, respectively.

Distribution of citing journals

The 8788 citations from *WJG* 2006-2007 were in 1597 journals (Table 6). The *American Journal of Gastroenterology*, *Alimentary Pharmacology & Therapeutics*, *Gastrointestinal Endoscopy* cited papers from *WJG* most often. Twelve journals each had 40-49 citations from *WJG*, nine journals had 30-39 citations, 27 journals had 20-29 citations, 115 journals had 10-19 citations, 245 journals

Table 2 List of papers published in *WJG* 2006-2007 with over 30 citations

Rank	First author	Title	Sources	Cited times
1	Crew KD	Epidemiology of gastric cancer	12(3): 354-362, 2006	98
2	Sebastiani G	Non invasive fibrosis biomarkers reduce but not substitute the need for liver biopsy	12(23): 3682-3694, 2006	53
3	Kim KP	Diagnostic criteria for autoimmune chronic pancreatitis revisited	12(16): 2487-2496, 2006	42
4	Tamura G	Alterations of tumor suppressor and tumor-related genes in the development and progression of gastric cancer	12(2): 192-198, 2006	40
5	Alter MJ	Epidemiology of hepatitis C virus infection	13(17): 2436-2441, 2007	39
6	Dietrich CF	Assessment of metastatic liver disease in patients with primary extrahepatic tumors by contrast-enhanced sonography versus CT & MRI	12(11): 1699-1705, 2006	36
7	Smith MG	Cellular and molecular aspects of gastric cancer	12(19): 2979-2990, 2006	36
8	Lakatos PL	Recent trends in the epidemiology of inflammatory bowel diseases: Up or down?	12(38): 6102-6108, 2006	35
9	Engwegen JYMN	Identification of serum proteins discriminating colorectal cancer patients and healthy controls using surface-enhanced laser desorption ionisation-time of flight mass spectrometry	12(10): 1536-1544, 2006	34
10	Glebe D	Viral and cellular determinants involved in hepadnaviral entry	13(1): 22-38, 2007	34
11	Hocke M	Contrast-enhanced endoscopic ultrasound in discrimination between focal pancreatitis and pancreatic cancer	12(2): 246-250, 2006	31
12	Schaefer S	Hepatitis B virus taxonomy and hepatitis B virus genotypes	13(1): 14-21, 2007	31
13	Danese S	Etiopathogenesis of inflammatory bowel diseases	12(30): 4807-4812, 2006	30

Table 3 Papers and their frequency of citation, according to category

Category	2006			2007			Total			Total citation rate	Total cited times
	No. of papers	Papers cited	Cited times	No. of papers	Papers cited	Cited times	Count of papers	Papers cited	Cited times		
Basic research	178	154	682	88	63	219	266	217	901	81.58	3.39
Case reports	216	167	477	208	105	226	424	272	703	64.15	1.66
Clinical research	93	84	454	67	49	176	160	133	630	83.13	3.94
Colorectal cancer	37	36	152	22	18	56	59	54	208	91.53	3.53
Editorial	85	82	664	58	50	255	143	132	919	92.31	6.43
Esophageal cancer	10	9	53	4	3	11	14	12	64	85.71	4.57
Gastric cancer	41	39	200	23	17	48	64	56	248	87.50	3.88
H pylori	17	14	34	10	9	15	27	23	49	85.19	1.81
Leading article	1	1	2			0	1	1	2	100.00	2.00
Letters to the editor	18	10	41	26	14	22	44	24	63	54.55	1.43
Liver cancer (cirrhosis)	34	30	171	27	21	59	61	51	230	83.61	3.77
Rapid communications	475	383	1593	391	268	773	866	651	2366	75.17	2.73
Reviews	75	72	860	37	32	136	112	104	996	92.86	8.89
Topic highlights	70	62	482	132	120	731	202	182	1213	90.10	6.00
Viral hepatitis	37	37	134	18	14	62	55	51	196	92.73	3.56
Other	1	0	0	7	0	0	8	0	0	0.00	0.00
Total	1388	1180	5999	1118	783	2789	2506	1963	8788	78.33	3.51

had 5-9 citations, 115 journals had four citations, 172 journals had three citations, 285 journals had two citations; and 598 journals had only one citation. These citations were in a wide range of related journals, which implies that *WJG* has a widespread academic impact.

DISCUSSION

The frequency with which papers from a given journal are cited is a measure of the academic profile and quality of the journal[4]. It is accepted widely that the academic quality of a journal is correlated positively with number of cited numbers in the journal. In citation analysis of papers published from 2006 to 2007 in *WJG*, 78.33% of all published papers were cited by a journal included in SCIE. Table 1 shows that 1074 papers were cited more than three times, with a total of 7503 citations. These accounted for 54.72% of all papers and 85.38% of the total number of citations. The highest number of citations for one paper was 98, and papers that were cited more than four times accounted for 40.96%.

The use of subsections or categories is useful for reflecting the scope of a given journal. The editors need periodically to evaluate their choice of subsections to facilitate development of the journal, enable academic exchange and attract the attention of readers with different information needs. Among all the categories in *WJG*, reviews, editorials, topic highlights and esophageal cancer were of most interest to readers. Papers in these categories showed a high citation rate and high average number of citations. However, the categories of *H pylori*, rapid communications, case reports, letters to the editor and leading articles had fewer citations, which may have resulted from the types of papers and current research trends, and deserves further attention from the journal editors.

Table 4 Geographic distribution of cited authors

Rank	Area	Paper	No. of cited papers	Percent (%)	Cited times	Average citations per paper	Rank	Area	Paper	No. of cited papers	Percent (%)	Cited times	Average citations per paper
1	China	635	451	71.02	1499	2.36	16	Netherlands	28	24	85.71	126	4.50
2	Japan	299	230	76.92	1035	3.46	17	Canada	27	26	96.30	186	6.89
3	United States	188	156	82.98	910	4.84	18	Australia	26	23	88.46	142	5.46
4	Germany	162	141	87.04	863	5.33	19	Hungary	26	24	92.31	146	5.62
5	Italy	151	129	85.43	619	4.10	20	Brazil	22	17	77.27	60	2.73
6	Turkey	111	80	72.07	235	2.12	21	Mexico	22	17	77.27	46	2.09
7	South Korea	91	66	72.53	213	2.34	22	Poland	21	17	80.95	61	2.90
8	Greece	82	56	68.29	173	2.11	23	Sweden	18	16	88.89	83	4.61
9	India	68	54	79.41	204	3.00	24	Denmark	17	15	88.24	50	2.94
10	Taiwan, China	64	50	78.13	206	3.22	25	Serbia	17	13	76.47	26	1.53
11	Spain	56	49	87.50	286	5.11	26	Israel	13	11	84.62	62	4.77
12	England	52	39	75.00	169	3.25	27	Egypt	12	8	66.67	19	1.58
13	France	52	44	84.62	257	4.94	28	Belgium	11	8	72.73	46	4.18
14	Iran	44	34	77.27	100	2.27	29	Ireland	11	10	90.91	41	3.73
15	Thailand	29	24	82.76	72	2.48		Total	1832	2355	77.79	7935	

Table 5 Year of citation for papers published in *WJG* 2006-2007

Publication year	2006			2007			2008			2009			Total		
	Other citation	Self citation	Total	Other citation	Self citation	Total	Other citation	Self citation	Total	Other citation	Self citation	Total	Other citation	Self citation	Total
2006	130	37	167	1424	167	1591	2817	262	3079	1049	52	1101	5420	518	5938
2007				110	29	139	1585	195	1780	883	48	931	2578	272	2850
Total	130	37	167	1534	196	1730	4402	457	4859	1932	100	2032	7998	790	8788
Percent (%)	77.84	22.16	100	88.67	11.33	100	90.59	9.41	100	94.99	5.01	100	91.01	8.99	100

Table 6 Journals with a high number of citations from *WJG* 2006-2007

No.	Journals	Citations	Proportion (%)
1	*World Journal of Gastroenterology*	790	8.99
2	*American Journal of Gastroenterology*	104	1.18
3	*Alimentary Pharmacology & Therapeutics*	102	1.16
4	*Gastrointestinal Endoscopy*	101	1.15
5	*Digestive diseases and Sciences*	90	1.02
6	*Hepatology*	90	1.02
7	*Journal of Gastroenterology and Hepatology*	88	1.00
8	*Inflammatory Bowel Diseases*	82	0.93
9	*Current Opinion in Gastroenterology*	78	0.89
10	*Gastroenterology*	76	0.86
11	*Gut*	75	0.85
12	*Liver International*	67	0.76
13	*Journal of Hepatology*	64	0.73
14	*International Journal of Cancer*	55	0.63
15	*Zeitschrift fur Gastroenterologie*	54	0.61
16	*European Journal of Gastroenterology & Hepatology*	53	0.60
17	*Pancreas*	53	0.60
18	*Revista Espanola de Enfermedades Digestivas*	52	0.59
19	*Journal of Gastroenterology*	51	0.58
	Total	2125	24.18

The authors of articles published in *WJG* were from a wide range of countries. From 2006 to 2007, China, Japan, Germany, Italy, USA and Turkey were ranked the top six countries by the number of papers and total number of citations[5]. The authors cited in *WJG* were also from a large range of 70 countries or regions. The papers written by authors from Canada, Hungary, Australia, Germany and Spain also had a high number of citations.

The impact factor is a routine bibliometric index to evaluate the academic profile of journals. Similar to the number of cited papers, the impact factor is correlated positively with the academic impact. According the criteria for measuring the impact factor in the Journal Citation Report, only the paper types of article, review, and proceedings are taken into account for calculations. The impact factor of *WJG* in 2008 was 2.081 [(3079 + 1780)/(1311 + 1024) = 2.081]. Regarding publication year, the number of times a paper was cited was low in the year of publication. In the following 2 years, the number of citations increased rapidly, which is consistent with the finding that the peak number of citations is within 2 or 3 years for most publications[6,7].

The number of journals that cite papers from a given journal reflects the academic profile of the journal, its influence, its impact on some specialties, and its attraction to readers from different fields. The papers published in *WJG* in 2006-2007 were cited 8788 times in 1597 journals. Given the wide range of citing papers and journals, as well as the large proportion of citations in the same field, it is clear that *WJG* has a widespread influence.

In conclusion, the setting of the subsections in *WJG* is appropriate. With a high self-citation rate, and citations in papers from different countries and different journals,

it appears that *WJG* is already on the right road and its academic impact and profile are expanding gradually.

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