

Advances in Journal of Geriatric Cardiology over the course of a decade

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The *Journal of Geriatric Cardiology* (JGC, ISSN 1671-5141/CN 11-5329/R) is a monthly, open-access, international, and peer-reviewed journal sponsored and published by the Institute of Geriatric Cardiology affiliated with Chinese PLA General Hospital. It was created in 2004 by Prof. Shi-Wen WANG, and as the current editor-in-chief, Prof. Yun-Dai CHEN has been involved in JGC for eight years and has achieved impressive advancements. In particular, JGC was indexed in the Science Citation Index Expand (SCIE) of the Web of Science in 2011 and PubMed Central in 2012. JGC focuses on both basic research and clinical practice regarding the diagnosis, prevention and treatment of cardiovascular disease in elderly people, especially those with concomitant diseases of other major organ-systems. According to the 2019 Journal Citation Reports (InCites, Clarivate Analytics), the SCI impact factor of JGC has increased from 1.763 to 2.491 in 2019. JGC ranks 30/51 and 66/138 in the fields of Geriatrics & Gerontology and Cardiac & Cardiovascular Systems, respectively.

Analysing the characteristics of JGC will enable the journal to better serve researchers and inform the long-term development trajectory of the journal. This article reports a bibliometric analysis of JGC (citation analysis), which is an effective research methodology that is often used to assess the characteristics and impacts of researchers, institutions, countries or journals and is the gold standard for measuring these impacts.^[1] Data collection was performed through December 2019 in the Scopus database, which is currently the database with the most

articles published in JGC according to searches in SCIE, PubMed Central, EMBASE, Google Scholar, Scopus, etc. This article presents a brief review of the characteristics of JGC based on the following four themes:

1. Publication and citation structure
2. Influential publications
3. Research hotspots in the journal
4. Major research collaborations among teams, institutions and countries

1. Publication and Citation Structure

As of December 2019, considering only articles, reviews, conference papers, and short surveys, JGC had published 899 manuscripts, the journal had 4,637 citations, and the number of citations per paper was 5.16. The h-index was 27.

The annual changes in the number of total publications (TPs), number of total citations (TCs), average number of citations per publication (ACPP) and h-index^[2] are shown in [Figure 1](#). Before 2012, the TPs, with several exceptions, ranged between 34 and 44 manuscripts per year. From 2012 to 2016, the number of publications steadily increased to an average of 77.8 manuscripts per year. In 2019, the number of manuscripts was twice that in 2006.

The trend in annual TCs in JGC first increased and then decreased. The TCs increased from 62 in 2006 to 855 in 2015 but then decreased to 56 in 2019. As the JGC was not indexed in SCIE before 2010, the TCs were relatively low. The low TCs of articles

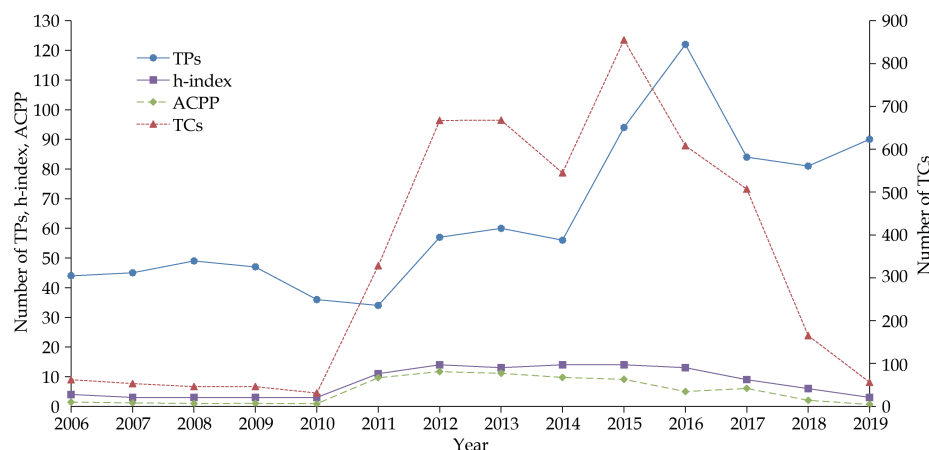


Figure 1 Annual changes in the TPs, h-index, ACPP and TCs in JGC. ACPP: average citations per publication; TCs: total citations; TPs: total publications.

published in JGC in recent years may be attributed to the “delayed effect”, as there has not been sufficient time for the accurate determination of the citation value of recent publications and they have therefore not yet achieved their highest citation potential. The overall trend in ACPP in JGC is similar to the trend in TCs.

The annual citation structure is presented in Table 1. The highest level of the h-index was distributed between 2011 and 2016. The relatively lower level of the h-index before 2011 and after 2016 may be attributed to the extent to which JGC is being used and recognized, the publishing cycle, the extent of circulation, and the innovativeness of the

content in JGC. Nonetheless, it is expected that the h-index of JGC will increase in the coming years. The ACPP in JGC showed a generally increasing trend. In addition, Table 1 shows the publication citations (PCs) in JGC.

2. Influential Publications

Table 2 summarizes the ten most-cited publications in JGC according to Scopus. The ten most-cited publications were mostly published between 2012 and 2017. In addition, most of them were from China, and the most common types of publications were reviews and articles. Notably, the review from

Table 1 Annual citation structure of JGC.

Year	TPs	TCs	TRs	TRs/IPs	H-index	PCs						
						≥ 50	≥ 40	≥ 30	≥ 20	≥ 10	≥ 5	≥ 1
2006	44	62	1,051	23.89	4	0	0	0	0	1	4	22
2007	45	53	1,026	22.80	3	0	0	0	0	0	1	28
2008	49	46	1,002	20.45	3	0	0	0	0	0	1	23
2009	47	46	1,105	23.51	3	0	0	0	0	1	3	17
2010	36	31	895	24.86	3	0	0	0	0	0	1	13
2011	34	328	1,607	47.26	11	0	0	1	4	11	25	33
2012	57	667	2,082	36.53	14	1	3	4	5	27	40	55
2013	60	668	2,007	33.45	13	2	3	6	8	22	38	58
2014	56	545	1,549	27.66	14	1	2	4	6	19	31	50
2015	94	855	3,212	34.17	14	1	2	4	9	29	56	92
2016	122	608	4,020	32.95	13	0	0	1	2	20	49	103
2017	84	507	3,423	40.75	9	2	4	5	5	9	21	71
2018	81	165	2,737	33.79	6	0	0	0	0	1	13	53
2019	90	56	3,597	39.97	3	0	0	0	0	1	1	27

PCs: publication of citations; TCs: total citations; TPs: total publications; TRs: total references.

Table 2 The ten most-cited publications in JGC.

No.	Title	Type	Authors	Countries	Year	TCs	TCs/Year
1	Depression, anxiety, and cardiac morbidity outcomes after coronary artery bypass surgery: a contemporary and practical review	Review	Tully PJ, Baker RA	Australia	2012	109	13.63
2	China cardiovascular diseases report 2015: a summary	Review	Chen WW, Gao RL, Liu LS, <i>et al</i>	China	2017	87	29.00
3	Systemic inflammatory response following acute myocardial infarction	Review	Fang L, Moore XL, Dart AM, <i>et al</i>	Australia, China	2015	77	15.40
4	Blood rheology and aging	Review	Simmonds MJ, Meiselman HJ, Baskurt OK	Australia	2013	75	10.71
5	Cognitive impairment in heart failure patients	Review	Leto L, Feola M	Italy	2014	67	11.17
6	CHADS ₂ versus CHA ₂ DS ₂ -VASc score in assessing the stroke and thromboembolism risk stratification in patients with atrial fibrillation: a systematic review and meta-analysis	Article	Chen JY, Zhang AD, Lu HY, <i>et al</i>	China	2013	67	9.57
7	Novel biomarkers for cardiovascular risk prediction	Review	Wang J, Tan GJ, Han LN, <i>et al</i>	China	2017	58	19.33
8	Atrial fibrillation: the current epidemic	Review	Morillo CA, Banerjee A, Perel P, <i>et al</i>	Canada, Switzerl, United Kingdom, France	2017	48	16.00
9	Management of chronic heart failure in the older population	Review	Azad N, Lemay G	Canada	2014	47	7.83
10	Exercise intolerance in heart failure with preserved ejection fraction: more than a heart problem	Review	Upadhyya B, Haykowsky MJ, Eggebeen J, <i>et al</i>	United States, Canada	2015	46	9.20

TCs: total citations.

the National Center for Cardiovascular Diseases published in 2017, entitled “China cardiovascular diseases report 2015: a summary”,^[3] has the highest average number of citations per year among all publications, and it is also the second most-cited publication. These ten most-cited publications, which were published by authors from Australia, Italy, the United Kingdom, France, the United States, Canada, Switzerland, *etc.*, have been noticed by and cited in the scientific community, indicating that JGC plays an important role in academic communication.

3. Research Hotspots in the Journal

Keywords, which represent the essential topics and critical terms in a publication, are reflections of the fundamental topic of a publication and the academic concepts presented by the author.^[4] The co-occurrence of keywords, which is defined by the appearance of two keywords in the same publication, indicates that there is a relationship between those keywords. Keyword cluster analysis is a method of assessing the co-occurrence of keywords, enabling a more accurate representation of the research hotspots in a given field. Therefore, the research hotspots in

JGC were identified by keyword cluster analysis, which was performed with VOSviewer software.

A total of 3,286 keywords were extracted from JGC, and the top-ten most representative 43 keywords, based on the frequency of occurrence, were analysed (Figure 2). Those keywords were divided into six clusters: (1) Cluster 1 focused on the complications, prognosis and revascularization strategy of acute coronary syndrome in the elderly population;^[5-8] (2) Cluster 2 focused on cardiovascular imaging and interventional therapy in elderly coronary artery disease patients;^[9-13] (3) Cluster 3 focused on aortic disease and frailty in the elderly population;^[14-17] (4) Cluster 4 focused on the risk factors for and imaging evaluation, prognosis and management of atrial fibrillation in elderly patients;^[18-21] (5) Cluster 5 focused on the analysis and management of risk factors in elderly cardiovascular disease patients;^[22-25] and (6) Cluster 6 focused on the mechanism, evaluation and resynchronization therapy of congestive heart failure in the elderly population.^[26-30] Among these topics, ‘percutaneous coronary intervention’, ‘acute myocardial infarction’, ‘aortic valve replacement’, ‘atrial fibrillation’, ‘cardiovascular disease’



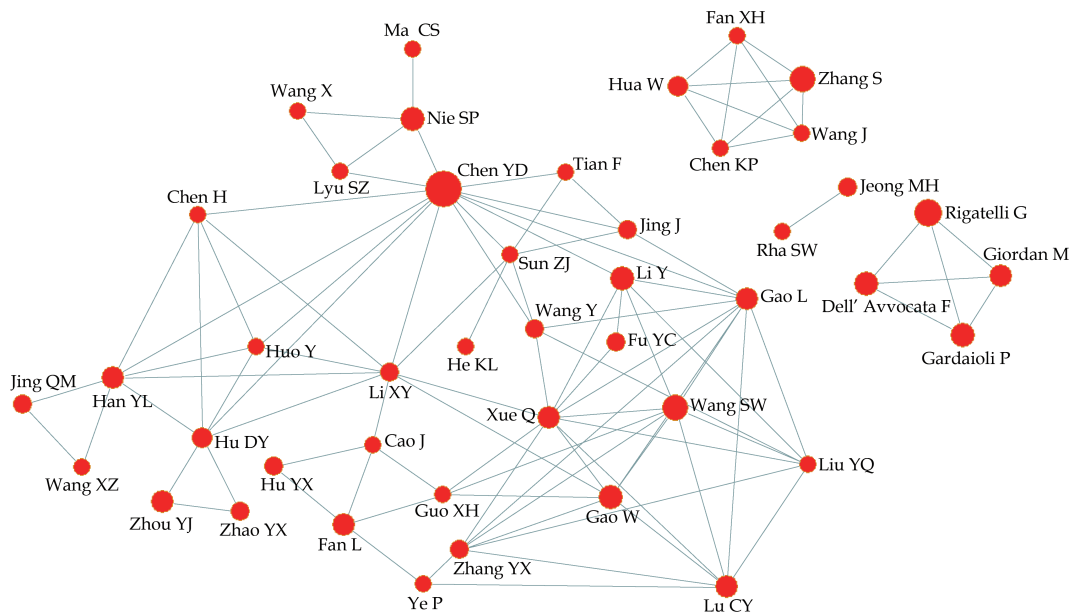


Figure 3 Co-author network with ≥ 2 collaborations and ≥ 6 publications in JGC.

Table 3 Most productive institutions in JGC.

No.	Institution	City/Country	TPs	TCs	ACPP	H-index	PCs				Active year
							≥ 15	≥ 10	≥ 5	≥ 1	
Inside of China											
1	Chinese PLA General Hospital	Beijing	136	625	4.60	11	10	20	34	96	2006–2019
2	Beijing Anzhen Hospital, Capital Medical University	Beijing	58	292	5.03	8	3	5	16	44	2007–2019
3	Fuwai Hospital, Chinese Academy of Medical Sciences and Peking Union Medical College	Beijing	45	75	1.67	5	0	1	5	20	2006–2019
4	Peking Union Medical College Hospital	Beijing	22	92	4.18	6	2	4	7	13	2006–2019
5	Chinese University of Hong Kong	Hong Kong	17	97	5.71	6	2	3	7	13	2006–2015
Outside of China											
1	Rovigo General Hospital	Italy	18	29	1.61	3	0	0	2	10	2006–2018
2	Mayo Clinic	United States	11	73	6.64	4	3	3	4	6	2011–2019
3	Hospital General Universitario Gregorio Marañón	Spain	11	47	4.27	5	0	0	7	10	2015–2018
4	Chiang Mai University	Thailand	10	20	2.00	1	0	1	1	4	2014–2019
5	Kangwon National University	South Korea	10	16	1.60	1	0	0	0	6	2017–2019

ACPP: average citations per publication; PCs: publication of citations; TCs: total citations; TPs: total publications.

Chinese Academy of Medical Sciences and Peking Union Medical College (China), Peking Union Medical College Hospital (China), and the Chinese University of Hong Kong (China) all have more than 13 citations.

Although JGC is published in China, it has included manuscripts from 52 countries. In addition to China, the United States, Italy, South Korea and

Spain are also leading contributors, accounting for 13.4%, 6.2%, 4.5% and 3.4% of the articles, respectively. As shown in Figure 4, the most productive countries are mainly distributed throughout Asia and Europe but are also located in North America, South America, Africa and so on.

In short, the *Journal of Geriatric Cardiology* has made encouraging achievements in the fields of basic

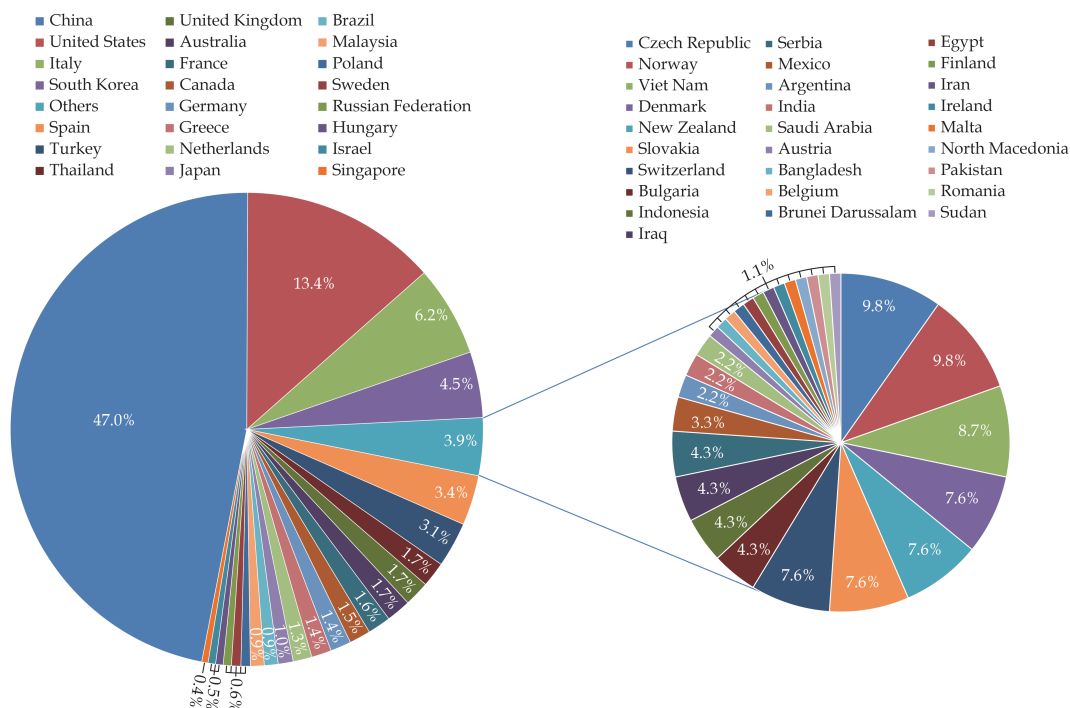


Figure 4 Most productive countries in JGC.

and clinical research on cardiovascular disease in elderly individuals in recent years. As the figures and tables in our article show, this progress is supported by reliable data. In the future, to better reflect the current status and promote the expansion of research on cardiovascular disease in the elderly population, we have adopted the following guiding principles for the long-term development of the journal: (1) strengthening the editorial board to promote academic cooperation and attract high-quality publications; (2) adopting international manuscript processing systems (such as ScholarOne™, Clarivate Analytics) to streamline the editorial and publication process and promote the exchange of academic information; (3) tracking research hotspots to invite manuscripts from authoritative experts; (4) funding editorial training to acquire the latest professional knowledge and skills; and (5) increasing publicity to expand the international influence of JGC.

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