

## Brief Report on Academic Productions on Rheumatic Diseases in China

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Rec date: June 07, 2016; Acc date: July 04, 2016; Pub date: July 11, 2016

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### Abstract

Academic productions by Chinese scholars have grown to the second place worldwide since 2009. However, little was known about Chinese academic contributions and influences on rheumatic diseases. In order to present a panorama of this field, a bibliometric analysis was performed based on data from two databases from 1987 to 2015. China has kept the third place in rheumatic diseases' publications since 2013. Nevertheless, most of these articles came with low impact factors and infrequent citations. Multidisciplinary teams led by orthopedists and rheumatologists were being built. Most popular journals mainly focused on rheumatology, while journals about Chinese medicine were unpopular. Though on right tracks, to study rheumatic diseases well in China, efforts from all aspects are needed.

**Keywords:** Rheumatic diseases; China; Bibliometric analysis

### Introduction

Prevalence of rheumatic diseases ranges from 11.6% to 46.4% in China [1], resulting in physical disability, low life quality and high economic burden to Chinese patients. The Journal Citation Reports (JCR) 2014 demonstrates that China is now second only to the USA in the number of annual scientific publications [2].

Since the first rheumatology unit in China was established in 1980 in the Peking Union Medical College Hospital, rheumatology has experienced great progress in both clinical practices and basic researches [3]. However, little was known about Chinese academic contributions to rheumatic diseases.

To evaluate the quantity and quality of Chinese articles on rheumatic diseases internationally and domestically, a bibliometric study was conducted, based on PubMed and Web of Science records from 1987 to 2015.

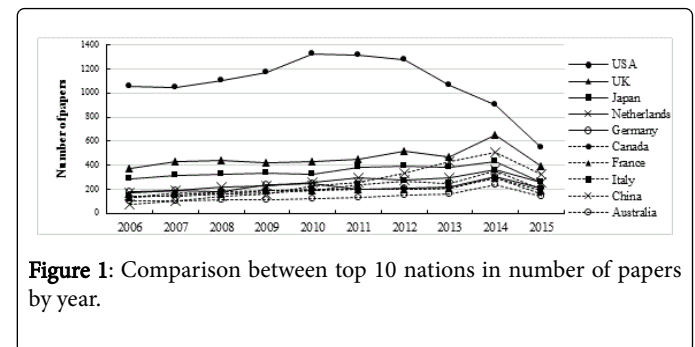
### Materials

The PubMed database was searched cautiously on 2016/2/27 to obtain the publication volumes of worldwide nations. Medical Subject Headings (MeSH) term "rheumatic diseases" was adopted and language was restricted to English with a publication date from 1987/1/1 to 2015/12/31.

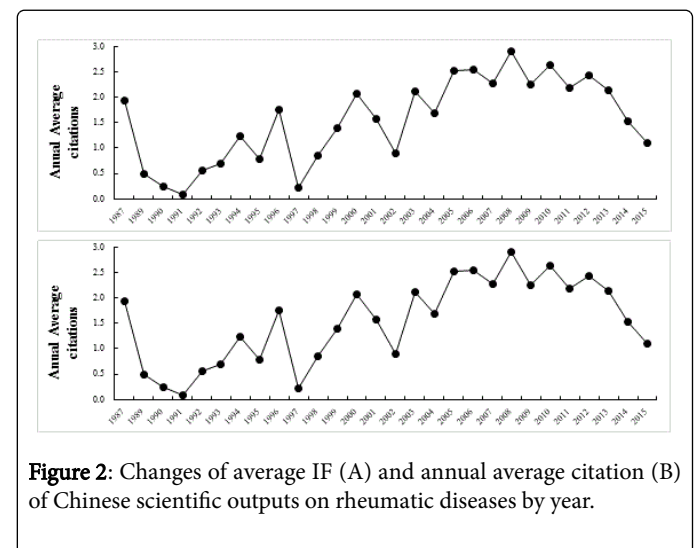
All citable literature like case reports/series, original articles (including RCT/CCTs, clinical and fundamental researches) and reviews (including meta-analysis and systemic reviews) met the inclusion requirements. The average impact factor (IF) of journals involved in the research was in accordance with the JCR 2014 (Thomson Reuters).

The citation times of each paper were collected from Web of Science. Publication sums of major countries from 2006 to 2015 were compared. Besides, IFs and citations on average were calculated and

compared by year and specialty. Top 25 popular journals were also listed.



**Figure 1:** Comparison between top 10 nations in number of papers by year.



**Figure 2:** Changes of average IF (A) and annual average citation (B) of Chinese scientific outputs on rheumatic diseases by year.

## Results

Totally, 138,103 articles on rheumatic diseases have been published till 2015 worldwide. The top 10 countries included the USA (13.97%), the UK (6.26%), Japan (4.79%), Netherlands (3.23%), Germany (2.86%), Canada (2.63%), France (2.60%), Italy (2.54%), China (2.17%) and Australia (1.74%). As is shown in Figure 1, China has kept a steady increase, and has remained the third place since 2013. Of the 2,109 Chinese articles finally entered analysis, only 13 had high IFs (>10). The average IF was 2.71, and average citations were 10.53 times. Though accumulated IFs and citations increased significantly, average IFs barely changed these years (Figure 2A), and annual average citations peaked at 2010, but later declined from 2.64 to 1.11 times (Figure 2B). According to Table 1, multiple disciplines were involved. Orthopedists (27.12%) and rheumatologists (18.07%) were particularly active in the field of rheumatic diseases (osteoarthritis [OA] and rheumatoid arthritis [RA] respectively). Immunologists (3.65%) also contributed a lot with greater average IF and citations especially.

Specialty	Numbers	Average IF	Average citation
Internal Medicine	487(23.09%)	2.86	10.52
Rheumatology	381(18.07%)	2.86	10.22
RA	221(10.48%)	2.97	10.87
SLE	12(0.57%)	3.65	9.5
Surgery	626(29.68%)	2.21	8.55
Orthopedics	572(27.12%)	2.19	8.56
OA	281(13.32%)	2.39	8.49
RA	65(3.08%)	2.18	5.14
Basic research	520(24.66%)	3.07	13.3
Pharmacy	128(6.07%)	2.78	10.17
Immunology	77(3.65%)	3.71	22.47
Others	354(16.79%)	2.37	8.99
Laboratory Medicine	144(6.83%)	2.38	8.52
Chinese Medicine	94(4.46%)	2.08	8.47
Ophthalmology	26(1.23%)	2.84	10.65
Dermatology	12(0.57%)	3.3	16.75
Not Available	135(6.40%)	-	-

**Table 1:** Proportions of specialties in Chinese scientific outputs on rheumatic diseases (n=2109).

The names of 25 journals with major number of publications related to rheumatic diseases made by Chinese researchers were listed in Table 2. More than half of them were journals dedicating in the field of rheumatology or immunology. Three journals about Chinese medicine were also very popular.

## Discussion and Conclusion

This bibliometric study revealed a huge development of rheumatology in China, but also indicating an undeniable truth that qualities of our articles fell far behind the quantities. To solve the problem, a more interactive, intellectual environment with more fair and open funding opportunities need to be offered by the government. Some experiences from Hong Kong or Taiwan might be useful. Additionally, a multidiscipline team led by rheumatologists and orthopedists, supported by other specialty experts is essentially necessary. To evaluate academic contributions, more attentions should be paid on creativity and innovation, instead of IFs and citations.

Rank	Journal	Number (%)	Rank	Journal	Number (%)
1	Rheumatol Int	100(4.74%)	11	J Arthroplasty	26(1.23%)
2	Clin Rheumatol	76(3.60%)		J Tradit Chin Med	
3	Chin Med J	65(3.08%)	12	J Ethnopharmacol	25(1.19%)
4	PLoS One	55(2.61%)	13	Ann Rheum Dis	23(1.09%)
5	J Rheumatol	48(2.28%)		Arthritis Res Ther	
6	Rheumatology	35(1.66%)	14	Int J Rheum Dis	22(1.04%)
7	Osteoarthritis Cartilage	31(1.47%)		Int Orthop	
8	Mol Med Rep	30(1.42%)	15	Biochem Biophys	20(0.95%)
	Scand J Rheumatol			Chin J Integr Med	
9	Arthritis Rheum	29(1.38%)		Inflammation	
	Clin Exp Rheumatol			Mol Biol Rep	
10	Int Immunopharmacol	28(1.33%)	16	BMC Musculoskelet Disord	18(0.85%)
				Clin Dev Immunol	

**Table 2:** Top 25 journals published articles on rheumatic diseases by Chinese authors.

More databases like EMBASE need to be searched for a higher sensitivity and specificity. Though we are developing on right tracks, there is still a long way for Chinese academics in the field of rheumatic diseases.

## Acknowledgements

This study is in part supported by grants from Science and Technology Commission of Shanghai Municipality (201444) and the Training Project of Academic Leaders in Health Science, Shanghai, China (XBR2011006).

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