

Internationalisation of general practice journals: a bibliometric analysis of the Science Citation Index database

Hsin Ma ^A, Bo-Ren Cheng^A, An-Hui Chang^C, Hsiao-Ting Chang^{A,B},
Ming-Hwai Lin^{A,B}, Tzeng-Ji Chen^{A,B,D} and Shinn-Jang Hwang^{A,B}

^ADepartment of Family Medicine, Taipei Veterans General Hospital, Taipei 11217, Taiwan.

^BSchool of Medicine, National Yang Ming Chiao Tung University, Taipei 11221, Taiwan.

^CDepartment of Family Medicine, Taiwan Adventist Hospital, Taipei 10556, Taiwan.

^DCorresponding author. Email: tjchen@vghtpe.gov.tw

Abstract. Research plays a crucial role in the development of primary health care. Researchers in other specialities have studied the internationalisation of their journals, but no such study has been conducted for general practice. The aim of this study was to analyse the volume of publication and internationalisation of general practice journals indexed in the Science Citation Index (SCI) database in 2019. Of the total 1573 articles and reviews in 19 journals indexed under the subject category of ‘primary health care’ in the SCI database, 86.4% ($n = 1359$) were published in four English-speaking countries (32.8% in seven US journals, 34.8% in five UK journals, 12.5% in two Australian journals and 6.4% in one Canadian journal) and 40.6% ($n = 639$) were authored or coauthored by authors from a country other than that in which the journal was published. There was a significant ($P < 0.05$) relationship between the country of publication and the degree of internationalisation of the journal. The degree of internationalisation of general practice journals varied from 94.2% for family practice to 2.0% for primary care. There are wide disparities in internationalisation among different countries and general practice journals. There is much room for improvement in the internationalisation of general practice journals in the SCI database.

Keywords: bibliometrics, general practice, primary health care, publishing, research.

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Introduction

Research is an important aspect of the development of medical specialities, and general practice medicine is no exception (Zarbailov *et al.* 2017). General practice and primary health care play a significant role in the functioning of health care (Hummerts-Pradier *et al.* 2009). A solid research basis is essential for a strong and vibrant primary care system (Huas *et al.* 2019). In recent decades, general practice researchers around the world have been very productive in terms of publications (Mendis *et al.* 2010; Schneider *et al.* 2012; Vezyridis and Timmons 2016). However, wide disparities exist among different countries (Krztoń-Królewiecka *et al.* 2013). Several studies conducted with respect to primary care research output showed that from 1974 to 2017, the US and the UK had greatest the publication volume, and the UK, Canada and Australia had the greatest percentage of publications in primary care (Mendis *et al.* 2010; Schneider *et al.* 2012; Abdulmajeed *et al.* 2014; Hajjar *et al.* 2019).

Nonetheless, the number of publications alone is not an objective indicator of the quality of research (Sebo 2020). Scholars have advocated using the journal impact factor, the number of citations and research productivity to assess quality,

but no consensus has been reached to date (Mårtensson *et al.* 2019; Sebo 2020). Even so, researchers in many countries have faced pressure because their performance is assessed according to the number of their publications in journals indexed in the Science Citation Index (SCI) database (Tijdkink *et al.* 2014).

The trend for international authors to submit manuscripts to journals is not only a way to increase the global visibility of journals, but also a way for the research field to flourish (Loughborough *et al.* 2016). The continued growth and international positioning of journals is also inextricably linked to internationalisation (Elkins 2020). In bibliometric research, there are several metrics by which to evaluate the internationalisation of academic journals, such as the composition of the editorial board (Chen *et al.* 2003; Saxena *et al.* 2003; Dyachenko 2014), the geographical distribution of authors (Hart *et al.* 2007), readers/subscribers and those citing the publications (Tompkins *et al.* 2001) and the scope of the articles (Lin *et al.* 2014). Hart *et al.* (2007) investigated the proportion of international papers in gastroenterology and hepatology journals, with authors outside the countries where the journal were published classified as ‘international’. Researchers in other specialties have studied the

internationalisation of their journals, but no such study has been conducted for general practice (Chen *et al.* 2003; Saadi and Mateen 2015; Schrock *et al.* 2016).

The features of general practice journals, especially their degree of internationalisation, should be of interest to general practice researchers worldwide, as well as to those who are concerned about the development of this speciality. Improving internationalisation can facilitate regional and international collaboration, influence policy-making processes and lead to the development of a global strategy to promote primary care under prevailing local conditions (van Weel and Kassai 2017; Clark *et al.* 2018). The aim of the present study was to analyse the volume of publication and internationalisation of general practice journals indexed in the SCI database.

Methods

Data collection

In the past, there was no category for general practice in the SCI database. Then, in 2010, the distinct subject category of 'primary health care' was created, although it only included a meagre 14 journals at that time (van Weel 2011). The category was subsequently expanded to include 19 journals in 2019, with most of the journals being general practice journals.

We searched for 'primary health care' as the subject category in the 2019 InCites Journal Citation Reports – Science Edition and identified 19 journals. The Web of Science database was accessed through the Taipei Veterans General Hospital Library website on 30 July 2020, and the bibliographic records of these 19 journals were retrieved. Because the SCI database syntactically indexes the country of each author's affiliation, we used the national distribution of authors' affiliations to denote 'internationalisation'. Because our aim was to gain an understanding of the most current internationalisation status of these journals, the time span of the records was limited from 1 January 2019 to 31 December 2019.

Study design and data processing

To understand the internationalisation of original articles, publications with a structured abstract (e.g. 'articles' and 'reviews') were included in the analysis. Notes, letters, editorials, news and meeting abstracts were excluded. The affiliations of authors from studies included were manually identified, whereas the countries of the publishers of the 19 journals were identified from their official websites.

An author was deemed to be 'foreign' if her/his affiliation was not located in the country in which the journal's publisher was located. For UK journals, authors from England, Scotland, Wales or North Ireland were treated as domestic. For journals belonging to a multinational society, the definition of domestic was accordingly extended to a broader region. For example, for a journal published by a European Association, even if the journal is registered in the UK, all Europeans would be regarded as domestic authors. Similarly, for a journal owned by the Nordic Federation, authors from five Nordic countries were treated as domestic.

A paper was then categorised into one of three authorship types: purely domestic without foreign author(s), purely foreign without domestic author(s) and mixed type. The internationalisation ratio of a journal was defined as the quotient of the

number of purely foreign and mixed-type articles divided by the total number of articles in a year.

Data were analysed using SPSS version 20.0. Chi-squared tests were used for group comparisons. Two-sided $P < 0.05$ was considered significant.

Results

In all, 1573 papers published in 19 journals were indexed under the 'primary health care' subject category in the SCI database in 2019. Of these 1573 papers, 639 (40.6%) were authored or coauthored by foreign authors, with 493 (31.3%) papers authored by purely foreign authors and 146 (9.3%) authored by both domestic and foreign authors (Table 1). The degrees of internationalisation for the 19 journals varied widely. *Family Practice* had the highest degree of internationalisation, with 94.2% of its papers authored by foreign authors, followed by *BMC Family Practice* (88.2%) and *Primary Health Care Research and Development* (80.2%). In contrast, three of the journals had very low degrees of internationalisation: *Primary Care* (2.0%), *American Family Physician* (5.7%) and *Journal of Family Practice* (5.7%). Among these journals with low rates of internationalisation in 2019, *Primary Care* (US) published 49 articles with only one coauthored by authors from Ireland; *American Family Physician* (US) published 88 articles, with only one article authored by purely foreign authors (from Brazil) and four articles coauthored by authors from England, Canada and Japan; and the *Journal of Family Practice* (US) published 53 articles, with only one article authored by purely foreign authors (China) and two articles coauthored by authors from Canada, Ireland and Japan.

Of the 1573 SCI-indexed general practice papers, 86.4% ($n = 1359$) were published in four English-speaking countries: 32.8% in seven US journals, 34.8% in five UK journals, 12.5% in two Australian journals and 6.4% in one Canadian journal. Of the remaining articles, 13.6% were published in journals from European countries, excluding the UK (Table 2). One of the 19 journals, *Atencion Primaria*, focuses on work related to primary health care and is published in Spanish (<https://www.journals.elsevier.com/atencion-primaria>, accessed 20 November 2020). The UK journals had the highest degree of internationalisation (75.9%), whereas the degree of internationalisation of the North American journals was only 19.4%. There was a significant relationship between the country of publication and the degree of journal internationalisation ($P < 0.05$).

Discussion

The development of academic general practice has flourished in recent years (Lin *et al.* 2014). However, in the present study, based on the geographical distributions of authorship, the mean internationalisation of SCI-indexed general practice journals in 2019 was 40.6%. Table 1 shows a comparison of individual journals, which revealed considerable disparities in their degrees of internationalisation, with the highest rate being 94.2% (*Family Practice*) and the lowest being 2.0% (*Primary Care*).

Internationalisation in journals for other specialities has been evaluated by researchers worldwide. Hart *et al.* (2007) examined the degree of internationalisation of gastroenterology and hepatology journals in 2005 and found that the internationalisation

Table 1. Internationalisation of authorships in general practice journals, 2019

Listed journals are ranked by impact factor

Journal title (publisher's country)	Impact factor ^A	Total no. papers ^B	No. (%) papers according to authorship type			Internationalisation ratio (%)
			Purely domestic	Mixed	Purely foreign	
<i>Annals of Family Medicine</i> (US)	4.686	70	41 (58.6)	3 (4.3)	26 (37.1)	41.4
<i>British Journal of General Practice</i> (UK)	4.190	102	70 (68.6)	13 (12.7)	19 (18.6)	31.4
<i>NPJ Primary Care Respiratory Medicine</i> (UK)	3.231	42	11 (26.2)	14 (33.3)	17 (40.5)	73.8
<i>Canadian Family Physician</i> (Canada)	3.112	100	87 (87.0)	13 (13.0)	0 (0)	13.0
<i>American Family Physician</i> (USA)	2.852	88	83 (94.3)	4 (4.5)	1 (1.1)	5.7
<i>Journal of the American Board of Family Medicine</i> (USA)	2.661	100	88 (88.0)	4 (4.0)	8 (8.0)	12.0
<i>European Journal of General Practice</i> ^C (Europe)	2.478	29	22 (75.9)	6 (20.7)	1 (3.4)	24.1
<i>Scandinavian Journal of Primary Health Care</i> ^D (Norway/Scandinavia)	2.160	56	50 (89.3)	4 (7.1)	2 (3.6)	10.7
<i>Primary Care Diabetes</i> ^E (Europe)	2.052	69	21 (30.4)	6 (8.7)	42 (60.9)	69.6
<i>Family Practice</i> (UK)	2.038	104	6 (5.8)	8 (7.7)	90 (86.5)	94.2
<i>BMC Family Practice</i> (UK)	2.022	178	21 (11.8)	14 (7.9)	143 (80.3)	88.2
<i>Primary Care</i> (USA)	2.010	49	48 (98.0)	1 (2.0)	0 (0)	2.0
<i>Physician and Sportsmedicine</i> (USA)	1.662	67	26 (38.8)	8 (11.9)	33 (49.3)	61.2
<i>Family Medicine</i> (USA)	1.443	89	80 (89.9)	6 (6.7)	3 (3.4)	10.1
<i>Primary Health Care Research and Development</i> (UK)	1.110	121	24 (19.8)	10 (8.3)	87 (71.9)	80.2
<i>Atencion Primaria</i> (Spain)	1.087	60	52 (86.7)	6 (10.0)	2 (3.3)	13.3
<i>Australian Journal of Primary Health</i> (Australia)	0.975	81	64 (79.0)	6 (7.4)	11 (13.6)	21.0
<i>Australian Journal of General Practice</i> ^F (Australia)	0.723	115	90 (78.3)	18 (15.7)	7 (6.1)	21.7
<i>Journal of Family Practice</i> (USA)	0.694	53	50 (94.3)	2 (3.8)	1 (1.9)	5.7
Total		1573	934 (59.4)	146 (9.3)	493 (31.3)	40.6

^ABased on the 2019 InCites Journal Citation Reports – Science Edition (Thomson Corporation).^BPapers limited to only 'article' and 'review' document types as listed in the SCI database.^CThe journal is organised as the official journal of WONCA Europe, the European Society of General Practice/Family Medicine. Authors of studies published in the journal who were from any European country were treated as domestic.^DThe journal is owned by the Nordic Federation of General Practice, which has national colleges of general practice in the five Nordic countries (Norway, Sweden, Finland, Denmark and Iceland). Authors of studies published in the journal from any of these five countries were treated as domestic.^EThe journal is the official journal of Primary Care Diabetes Europe. Authors from Europe were considered domestic.^F*Australian Family Physician* was replaced by *Australian Journal of General Practice* in 2018, which was temporarily categorised in 'Medicine, general and internal'.**Table 2. Internationalisation of general practice journals according to publisher's country or region, 2019**

Country or region	No. journals	No. (%) papers (<i>n</i> = 1573)	No. papers with foreign author(s) ^A	Internationalisation ratio ^B (%)	<i>P</i> -value
USA	7	516 (32.8)	100	19.4	<0.001
UK	5	547 (34.8)	415	75.9	
Australia	2	196 (12.5)	42	21.4	
Canada	1	100 (6.4)	13	13.0	
Europe ^C	4	214 (13.6)	69	32.2	
Total	19	1573 (100.0)	639	40.6	

^APapers with purely foreign or mixed-type authorship.^BThe internationalisation ratio is the proportion of international papers among all papers published in a country or region.^CHere, 'Europe' denotes European countries excluding the UK.

ratio of all research articles was 67.6%. *Chen et al. (2003)* found that the percentage of international authors published in *American Journal of Roentgenology* in 2000–02 was 37%. *Park et al. (2019)* reported that the percentage of international authors in *The Spine Journal* increased from 17.8% in 2005 to 69.1% in 2015. Some studies have also revealed an increasing trend in internationalisation in journals in other specialities in past

decades (*Tompkins et al. 2001; Chen et al. 2003; Schrock et al. 2016*). To date, the ideal ratio of internationalisation has not been comprehensively investigated. Hence, the lack of a gold standard for the degree of internationalisation is an issue that needs to be resolved.

Explanations for the low rate of internationalisation among general practice journals could include the editorial policies of

the journals, reviewer bias, overall research production, the generalisation of research findings and researchers' motivation to publish in a foreign language or in a particular journal (Langer *et al.* 2004; Goodyear-Smith *et al.* 2019). The scope and target audience of a journal are key determinants of the internationalisation ratio of general practice journals. For example, *Family Practice* (UK), which has a high percentage of internationalisation, orientates itself as an international journal of general practice, not one limited only to research conducted in developed countries (<https://academic.oup.com/fampra/pages/About>, accessed 20 November 2020). Moreover, *Family Practice* is not affiliated with any local or regional society. Another example is *NPJ Primary Care Respiratory Medicine*, which aims to inform and educate an international and multidisciplinary audience, including clinicians, respiratory specialists, respiratory physiotherapists, dieticians and nurses who take care of primary care patients with respiratory diseases (<https://www.nature.com/npjpcrm/about/aims>, accessed 8 July 2021). In contrast, internationalisation levels tend to be low among journals that belong to local societies. For example, *American Family Physician* (<https://www.aafp.org/journals/afp/issues.html>, accessed 20 November 2020) is *per se* an official publication of the American Academy of Family Physicians. Similarly, the *Scandinavian Journal of Primary Health Care* is published by the Nordic Federation of General Practitioners, which is owned by the five Nordic Colleges of General Practitioners (<https://www.nfgp.org/>, accessed 8 July 2021).

Researchers facing academic performance assessments may be more likely to submit their papers to high-ranked journals. Academic general practice developed later than other medical specialities, as reflected by the fact the 'primary health care' category was only recently included in the SCI database (van Weel 2011). As a result, the number of SCI-indexed general practice journals is still relatively limited, and the impact factors and ranks of these journals are not high compared as those covering other medical specialities (www.webofknowledge.com, accessed 20 November 2020). In addition, many GPs may submit their papers to journals covering subject categories other than primary health care (Sebo 2020). More importantly, the speciality of general practice emphasises psychosocial aspects of medical care that are deeply rooted in individual cultures (Farre and Rapley 2017); that is, the research themes and results of a study conducted in one country may not always apply to other countries.

Previous studies have examined possible solutions to the low rate of internationalisation among general practice journals (Klemenc-Ketiš and Kersnik 2014; Lisak 2014; Sugano 2015). First, it may be helpful to invite more people from abroad to join the editorial board, particularly those from countries near where the journal publisher is located that share similar customs and cultures (Sugano 2015). Second, English language editing resources available from publishers and other companies that can address language issues, making the manuscript more comprehensible and improving submission acceptance rates, especially for those authors for whom English is not their primary language (Lisak 2014). Third, international exchanges and seminars provide opportunities to build a global network, share ideas and investigate common problems in different regions (Klemenc-Ketiš and Kersnik 2014).

There was a statistically significant ($P < 0.05$) relationship between the publisher's country and the degree of internationalisation of a journal. Most (86.4%) of the SCI-indexed general practice papers in 2019 were published in four English-speaking countries, namely the US, UK, Australia and Canada (Table 2). This implies English-speaking countries have an inherent advantage in publishing in international journals because they can easily dominate English writing. Significantly, the UK journals had the highest degree of internationalisation (75.9%), which may be attributed to international medical graduates accounting for approximately one-quarter of the General Medical Council register in the UK (Hashim 2017). In addition, 40% of UK medical students undertake medical electives, which are accomplished in the final year of study in a place and speciality of their interest, in developing countries. This may broaden cultural awareness and arouse greater concern for global health (Wallace and Webb 2014; Tiller and Jones 2018).

With the rise of international journals, debate has long prevailed as to the role of local journals. Local journals publish locally relevant research that is expected to disseminate knowledge and translate into practice and policy (Ofori-Adjei *et al.* 2006; Kristensen *et al.* 2015). In addition to local focus and appeal, local journals serve medical education roles by publishing secondary evidence or distilling guidelines and reviews into domestic language (Ofori-Adjei *et al.* 2006). However, local journals face challenges of fewer good-quality papers, fewer citations, less institutional support and a lower contribution to reputation building (Bodaghi *et al.* 2015; Seo *et al.* 2016). In addition, locals develop knowledge for domestic audiences, whereas internationalists generate knowledge for both local and international audiences, because increased international collaboration leads to higher publication rates (Kwiek 2020). With a vision of developing primary care research capacity, international collaboration can create practice-based evidence to support evidence-based primary care (Ponka *et al.* 2020).

This study has some limitations. First, we could only identify papers accepted and published by SCI-indexed general practice journals. We could not determine the full number of submissions or the countries of those submissions. This meant that we could not ascertain whether the low degree of internationalisation of a given journal was attributable to a low number of submissions from international authors or a low rate of acceptance and publication of submissions from international authors. Second, the internationalisation of general practice journals in this study may have been overestimated because we did not consider the close relationships among English-speaking countries or between the UK and other European countries. Third, this study was based on the SCI database, in which English is the dominant language in journal publications. Thus, our results cannot be extended to most general practice journals published around the world.

Conclusion

Although academic research in general practice has been developing vigorously in recent years, there is much room for improvement in the internationalisation of general practice journals in the SCI database. There are wide disparities in internationalisation among different countries and journals.

Even though possible solutions to the low rate of internationalisation among general practice journals have been studied, their efficacy is uncertain. Further studies on the internationalisation of general practice journals may be needed.

Conflicts of interest

The authors declare no conflicts of interest.

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