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Original Research

Analysis of ten years of publishing in Pharmacy Practice

Antonio E. MENDES, Fernanda S. TONIN, Fernando FERNANDEZ-LLIMOS.

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ABSTRACT

Objective: The aim of this study is to characterize the patterns and trends in the editorial process and features of the first decade of Pharmacy Practice, with the final goal of initiating a benchmarking process to enhance the quality of the journal.

Methods: Metadata of all of the articles published from 2006 issue #3 to 2016 issue #2 were extracted from PubMed and complemented by a manual data extraction process on the full-text articles. Citations of these articles were retrieved from Web of Science (WOS), Scopus, and Google Scholar on August 15, 2016. The references from all of the articles published by Pharmacy Practice in 2015 were also extracted. International collaboration was explored with a network analysis.

Results: A total of 40 issues were published in this timespan, including 349 articles, 91.1% of which were original research articles. The number of citations received by these articles varies from 809, as reported by the WOS, to the 1162 reported by Scopus and the 2610 reported by Google Scholar. The journals cited by Pharmacy Practice are mainly pharmacy journals, including Pharm Pract (Granada), Int J Clin Pharm, Am J Health-Syst Pharm, Am J Pharm Educ, and Ann Pharmacother. Only 17.3% of the articles involved international collaboration. Delays in the editorial process increased in 2013, mainly due to an increase in acceptance delay (mean=138 days).

Conclusion: Pharmacy Practice has improved its visibility and impact over the past decade, especially after 2014, when the journal became indexed in PubMed Central. The editorial process duration is one of the weaknesses that should be tackled. Further studies should investigate if the low international collaboration rate is common across other pharmacy journals.

Keywords: Periodicals as Topic; Bibliometrics; Authorship; Publishing; Cooperative Behavior; Pharmacists

INTRODUCTION

Pharmacy Practice, officially abbreviated by the National Library of Medicine as Pharm Pract (Granada) (electronic-ISSN 1886-3655; print-ISSN: 1885-642X), was created in 2006 by a group of academics and researchers who were interested in the area of pharmacy practice. Pharmacy Practice continued a national-scope Spanish journal, Seguimiento Farmacoterapeutico, with the first issue published under the Pharmacy Practice banner appearing in the third quarter of 2006. Since its inception, Pharmacy Practice has been committed to the following principles:

- Being a gratis journal, also known as an article processing charge-free (APC-free) journal.
- Having a global scope.
- Publishing research articles in the broad area of pharmacy practice.

Truthfully, a clear definition of the area of pharmacy practice does not exist. In 1969, the World Health Organization (WHO) described the mission of pharmacy practice as being “to provide medications and other health care products and services and to help people and society to make the best use of them”.[1] This declaration embraced pharmaceutical care philosophy for the first time. Ten years later, the WHO, in collaboration with the International Pharmaceutical Federation (FIP) published the book “Developing pharmacy practice”.[2] Although the book contained a number of definitions, one for “pharmacy practice” was not among them. Although embracing pharmaceutical care as the main focus of pharmacists’ activities, this reference book presented a broader scope that included other professional pharmacy services. Other reference books include in the scope of pharmacy practice not only patient care activities but also the use of medicines by populations, including subjects such as pharmacovigilance or pharmacoepidemiology.[3] The terminology in this area is made even more complicated when considering social pharmacy and clinical pharmacy.[4]

Identifying pharmacy practice journals is not an easy task. Minguet et al. used the Medical Subject Headings (MeSH) to identify the journals that most frequently used the MeSH term ‘Pharmacists’.[5] They found ten journals with a high prevalence of this MeSH term. However, this method is limited by the fact that not all of the journals included in PubMed are also indexed in Medline. MeSH terms are assigned only to Medline-indexed journals, so they could have missed several pharmacy practice journals.[6] Additionally, their study raises some

* **Antonio E. Mendes**. MSc(Pharm). Pharmaceutical Sciences Postgraduate Program, Department of Pharmacy. Federal University of Paraná. Curitiba (Brazil). mmendesantonio@gmail.com
Fernanda S. Tonin. MSc(Pharm). Pharmaceutical Sciences Postgraduate Program, Department of Pharmacy. Federal University of Paraná. Curitiba (Brazil). fer_stumpf_tonin@hotmail.com
Fernando Fernandez-Llimos. PhD. PharmD. Editor-in-chief, Pharmacy Practice. Institute for Medicines Research (iMed.ULisboa), Department of Social Pharmacy, Faculty of Pharmacy, University of Lisbon . Lisbon (Portugal). f-llimos@ff.ul.pt

Table 1. Distribution of articles classified by publication type.

Publication year	Publication type				
	Editorial	Review	Guideline	Original research	Total
2006	-	1	-	16	17
2007	-	3	-	29	32
2008	-	1	-	31	32
2009	-	5	-	30	35
2010	-	4	-	31	35
2011	-	1	3	32	36
2012	1	2	-	30	33
2013	1	-	-	33	34
2014	1	2	-	34	37
2015	2	3	-	32	37
2016	-	1	-	20	21
Total	5	23	3	318	349

doubts about the quality of MeSH assignment in the area of pharmacy practice.[5]

Using the 'Pharmacology and Pharmacy' subject category in Journal Citation Reports (JCR) may not improve the identification of pharmacy practice journals. First, this category is a merged group of journals in the areas of pharmacology and pharmacy. Second, the coverage in JCR is highly restricted, particularly for pharmacy subjects. Finally, some of the journals that Minguet et al.[5] identified as pharmacy journals are actually classified in other JCR subject categories (e.g., Res Soc Admin Pharm).

Pharmacy Practice adopted the broad concept of pharmacy practice in its scope, including among its areas of interest all potential pharmacist services – in any setting and environment – and all of the determinants that affect their success (e.g., education, quality assurance, epidemiology). With the final goal of creating the basis for a benchmarking process, the objective of this study is to examine the features and trends of the first decade of publication of Pharmacy Practice in three areas: editorial process delay, submitting authors (including collaboration patterns), and citation patterns (both received and produced).

METHODS

Articles published in the first decade of Pharmacy Practice were included for analysis (2006-2016). Metadata were compiled by importing a file with all of the articles indexed in PubMed using the MEDLINE format. This file contained all authors (full and abbreviated name and complete affiliation) and full references for each article (publication year, volume, issue, and pages), and the publication type was obtained through a manual search of the journal's table of contents.

Editorial process dates (received, accepted, published) were extracted from PubMed and then corroborated from submission records. The editorial process duration for original research articles was computed as three different time periods: acceptance delay (time from submission to acceptance), publication delay (time from acceptance to publication); and editorial process delay (time from submission to publication).

Citations for each published article were obtained on August 15, 2016, from three different sources: the Web of Science (apps.webofknowledge.com/), Scopus (www.scopus.com), and Google Scholar (scholar.google.com/). To evaluate the patterns in the referencing practices observed in Pharmacy Practice and its potential influence in other journals' 2015 Impact Factor, all bibliographic references in articles published in 2015 were manually compiled. The citation half-life was computed as the median value of the distribution of the cited articles' publication years.

Authors were retrieved from PubMed records, and their affiliations were retrieved from a manual search of original articles. For each article, the countries of the authors' affiliation were noted, and a collaboration network was created using the Gephi software (gephi.org). The network graph was built using the ForceAtlas2 algorithm.[7] The size of the nodes was set to be proportional to the number of publications in Pharmacy Practice by an author from each country. The color of the nodes represents the respective proportion of articles written in cooperation, with a spectrum ranging from red 0.0% to green 100.0% articles with international collaboration. The thickness of the edges represents the intensity of collaboration between two countries.

RESULTS

During the decade under analysis, Pharmacy Practice published 40 issues that included 349 articles (mean 8.7 per issue, SD=0.9). A total of 318 (91.1%) of the contributions were original research

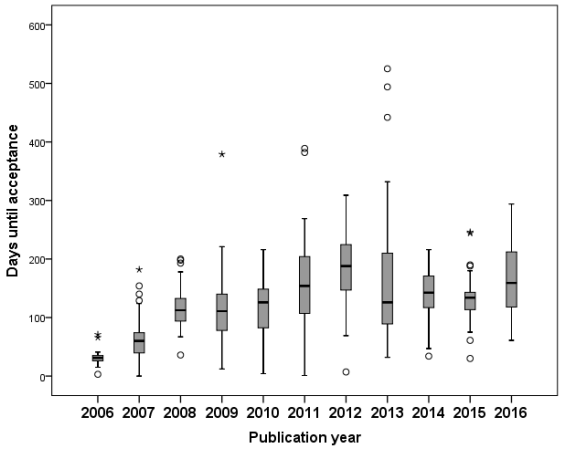

Figure 1. Evolution on the acceptance delay in original research articles.

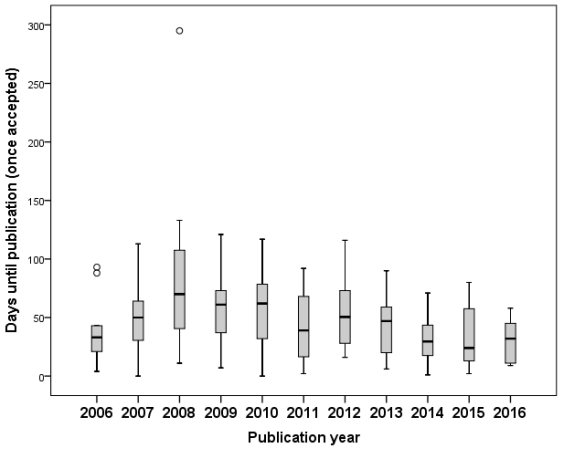

Figure 2. Evolution on the publication delay in original research articles.

articles, followed by 23 (6.6%) reviews, 5 (1.4%) editorials and 3 (0.9%) guidelines/statements. Table 1 presents the distribution of contributions by publication type and year.

The total editorial process duration for original research articles was 186 days (SD=77). This time included 138 days (SD=74) for mean acceptance delay and 48 days (SD=32) for mean publication delay. Acceptance delay increased until a reaching a maximum in 2012, where it was 192 days (SD=52). From there, it decreased slightly to 177 days (SD=127) in 2013, 148 days (SD=33) in 2014, and 138 days (SD=40) in 2015 and then rose to 167 days (SD=60) in 2016 (Figure 1). However, publication delay presented less variation and an overall downward trend, ranging from 30 days (SD=18) in 2016 to 79 days (SD=53) in 2007 (Figure 2).

The number of citations received differed depending on the source of information. Web of Science identified 809 citations for 223 articles, with 124 uncited and 24 articles receiving more than 10 citations. Scopus reported 1162 citations for 244 articles, with 90 uncited and 7 with more than 10 citations. Google Scholar counted 2610 citations for 295 articles, with 54 uncited and 87 with more than 10 citations. Table 2 presents the differences in citations received for the highly cited articles from the Scopus count. The number of citations, as reported in the Web of Science, continuously increased during the study period: 6 in 2007; 20 in 2008; 36 in 2009; 69 in 2010; 76 in 2011; 81 in 2012; 94 in 2013; 139 in 2014; and 233 in 2015.

When evaluating the consumption of scientific knowledge, the 37 articles published in 2015 included 1086 bibliographic references, with a mean of 29.4 references per article (SD=14.7). A total of 831 (76.5%) references cited articles published in 351 different scientific journals. The five most frequently cited journals accounted for 153 (18.4%) citations (Am J Pharm Educ, n=52; Am J Health-Syst Pharm, n=32; Int J Clin Pharm / Pharm World Sci, n=26; Int J Pharm Pract, n=22; and Ann Pharmacother, n=21) while 232 journals were cited just once. A total of 15 self-citations were found in 2015. The citation half-life was 2009 (or 6 years), with 153 references to articles published in 2014 and 2013 and 25 references to articles published in 2015. When examining the 178 references to articles published after 2012 (or those that would count for Impact Factor calculations), the top five most cited journals are Pharm Pract (Granada), n=8; Int J Clin Pharm, n=7; Am J Health-Syst Pharm, n=6; Am J Pharm Educ, n=5; and Ann Pharmacother, n=5.

The 349 published articles since 2006 were written by 1264 authors, comprising 1020 different researchers. The median number of authors differed depending on the publication type: 1 for editorials, 2 for reviews and for guidelines/statements, and 3 for original research articles, with a mean of 3.7 (SD=1.6) in the last category. No differences were found in the number of authors per original research article over the years (Figure 3). In addition, the average number of author collaborations has not changed over the past ten years. Authors represented 58 different countries, with the United States as the most prevalent, followed by Australia (Table 3). Only 62 articles (17.8%) were written by a collaboration of authors from more than one country. The construction of an international collaboration network for these 62 articles revealed a graph (Figure 4), with 58 countries (nodes) and 74 edges (articles in collaboration) connecting the countries. However, 14 nodes remain isolated in the graph: Brazil, Ghana, Ireland, Israel, Jamaica, Japan, Kosovo, Lebanon, Mexico, New Zealand, Palestine, Poland, Trinidad, and Turkey. International collaboration indicators are described in Table 3.

DISCUSSION

Pharmacy Practice has achieved the 10-year milestone while trying to reduce the dispersion of pharmacy-specific literature among a myriad of journals[5] and simultaneously keeping its original philosophy of being one of the few open-access journals in this area without APC. The goal of making research freely available is only partially satisfied by APC open-access journals because these merely shift the financial burden of publishing from the readers to the authors. The Pharmacy

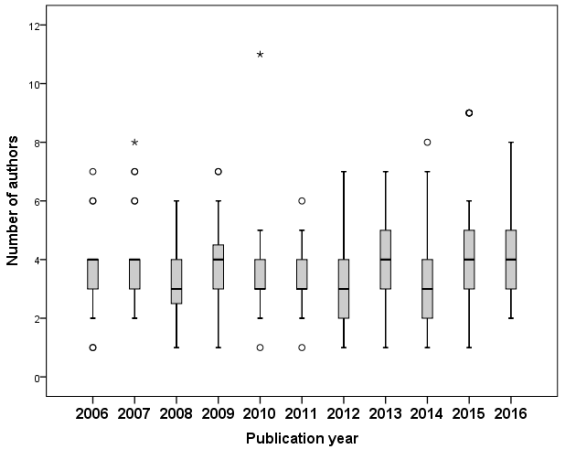

Figure 3. Evolution on the number of authors in original research articles.

Table 2. Citation data of articles cited more than 10 times as reported in Scopus.

PMID	Authors. Title	DP	Scopus	WoS	Scholar
25214919	Armour C, Brillant M, Krass I. Pharmacists' views on involvement in pharmacy practice research: Strategies for facilitating participation	2007	29	21	46
25152791	Niquille A, Lattmann C, Bugnon O. Medication reviews led by community pharmacists in Switzerland: a qualitative survey to evaluate barriers and facilitators	2010	19	16	31
25157287	Al-Gedadi NA, Hassali MA, Shafie AA. A pilot survey on perceptions and knowledge of generic medicines among consumers in Penang, Malaysia	2008	21	11	38
24688612	Adisa R, Fakeye TO, Fasanmade A. Medication adherence among ambulatory patients with type 2 diabetes in a tertiary healthcare setting in southwestern Nigeria	2011	13	11	33
25132881	Pattanaworasate W, Emmerton L, Pulver L, Winckel K. Comparison of prescribing criteria in hospitalised Australian elderly	2010	11	11	19
25152790	Hadi MA, Hassali MA, Shafie AA, Awaisu A. Evaluation of breast cancer awareness among female university students in Malaysia	2010	21	10	38
25152788	Rickles NM, Brown TA, McGivney MS, Snyder ME, White KA. Adherence: a review of education, research, practice, and policy in the United States	2010	14	10	24
25177406	Herborg H, Haugbolle LS, Sorensen L, Rossing C, Dam P. Developing a generic, individualised adherence programme for chronic medication users	2008	14	10	19
25214922	Crook M, Ajdukovic M, Angley C, Soulsby N, Doecke C, Stupans I, Angley M. Eliciting comprehensive medication histories in the emergency department: the role of the pharmacist	2007	11	10	18
25126145	Ali SE, Ibrahim MI, Palaian S. Medication storage and self-medication behaviour amongst female students in Malaysia	2010	15	9	49
25214920	Krivoy N, El-Ahal WA, Bar-Lavie Y, Haddad S. Antibiotic prescription and cost patterns in a general intensive care unit	2007	22	9	45
25143794	Adisa R, Alutundu MB, Fakeye TO. Factors contributing to nonadherence to oral hypoglycemic medications among ambulatory type 2 diabetes patients in Southwestern Nigeria	2009	14	9	40
24155822	Ubeda A, Ferrandiz L, Maicas N, Gomez C, Bonet M, Peris JE. Potentially inappropriate prescribing in institutionalised older patients in Spain: the STOPP-START criteria compared with the Beers criteria	2012	20	9	31
25170352	Martinbiancho J, Zuckermann J, Dos Santos L, Silva MM. Profile of drug interactions in hospitalized children	2007	13	9	27
25214912	Stuchbery P, Kong DC, Desantis GN, Lo SK. Identification by observation of clinical pharmacists' activities in a hospital inpatient setting	2007	11	9	22
22282720	Farrell J, Ries NM, Boon H. Pharmacists and Natural Health Products: A systematic analysis of professional responsibilities in Canada	2008	15	9	19
25132880	Aaltonen SE, Laine NP, Volmer D, Gharat MS, Muceniece R, Vitola A, Foulon V, Desplenter FA, Airaksinen MS, Chen TF, Bell JS. Barriers to medication counselling for people with mental health disorders: a six country study	2010	11	9	16
24155810	Dylst P, Vulto A, Simoens S. How can pharmacist remuneration systems in Europe contribute to generic medicine dispensing?	2012	11	9	14
25214913	Pote S, Tiwari P, D'Cruz S. Medication prescribing errors in a public teaching hospital in India: A prospective study	2007	20	8	45
25214918	Sharma H, Aqil M, Imam F, Alam MS, Kapur P, Pillai KK. A pharmacovigilance study in the department of medicine of a university teaching hospital	2007	14	8	24
25170353	Ajdukovic M, Crook M, Angley C, Stupans I, Soulsby N, Doecke C, Anderson B, Angley M. Pharmacist elicited medication histories in the Emergency Department: Identifying patient groups at risk of medication misadventure	2007	11	8	13
25170364	Gholami K, Ziaie S, Shalviri G. Adverse drug reactions induced by cardiovascular drugs in outpatients	2008	13	7	15
25170358	Cordina M, Safta V, Ciobanu A, Sautenkova N. An assessment of community pharmacists' attitudes towards professional practice in the Republic of Moldova	2008	11	6	24
24198861	Palaian S, Ibrahim MI, Mishra P. Health professionals' knowledge, attitude and practices towards pharmacovigilance in Nepal	2011	11	4	37

Practice editorial board decided to make it a gratis journal, which means that no one pays (neither readers nor authors).[8] This is only possible in a collaborative publishing schema where authors submit papers for the sake of communicating the results of their research, where editorial and advisory board members collaborate with the editorial process to maintain a gratis journal in their area of interest, and where peer-reviewers comment on manuscripts to improve their quality. This is not a new model but is actually a traditional scholarly publishing system in which societies and groups of studies run journals for no profit. At this point, it may be important to highlight that open-access APC-free journals cannot, by definition, be predatory journals.[8]

A few variations in publication times were observed in Pharmacy Practice over the years. The time to acceptance increased significantly in the last several years, which may be associated with changes in the review process. The peer review process is a key element of scientific publishing. In 2013, Pharmacy Practice modified its process of selecting potential peer reviewers for a manuscript. Instead of using a closed database of individuals who offered to be reviewers, reviewers were selected from PubMed among authors of similar

Table 3. Bibliometric indicators about international collaboration by affiliation country of the authors.

Country	Authors (n)	Articles (n)	Articles in international collaboration		Countries co-authoring (n)
			N	(%)	
USA	336	113	9	7.96	12
Australia	74	33	6	18.18	10
Brazil	59	16	0	-	-
Nigeria	52	23	3	13.04	3
Malaysia	39	25	15	60	9
UK	37	16	8	50	6
India	30	11	3	27.27	8
Spain	29	8	2	25	1
Canada	24	9	2	22.22	2
New Zealand	19	5	0	-	-
Thailand	19	7	3	42.86	3
Denmark	17	9	3	33.33	4
Sweden	17	8	2	25	3
United Arab Emirates	17	7	4	57.14	2
Norway	16	5	1	20	2
Japan	14	3	0	-	-
Portugal	14	13	7	53.85	6
Malta	12	6	2	33.33	3
Palestine	12	3	0	-	-
France	11	6	5	83.33	5
Lebanon	11	2	0	-	-
Saudi Arabia	11	13	11	84.62	6
Belgium	10	9	5	55.56	9
Bulgaria	10	4	2	50	2
Finland	10	4	2	50	5
Iran	9	4	1	25	1
Ethiopia	8	3	2	66.67	2
Germany	7	4	1	25	1
Switzerland	7	3	1	33.33	1
Turkey	7	1	0	-	-
Ghana	6	2	0	-	-
Israel	6	2	0	-	-
Kuwait	6	5	4	80	4
Mexico	6	1	0	-	-
Trinidad	6	1	0	-	-
Indonesia	5	2	1	50	1
Jamaica	5	2	0	-	-
Jordan	5	2	2	100	2
Nepal	5	2	1	50	2
Ireland	4	2	0	-	-
Kosovo	4	1	0	-	-
Pakistan	3	4	3	75	2
Poland	3	1	0	-	-
Sudan	3	2	2	100	3
Estonia	2	3	3	100	7
Latvia	2	1	1	100	5
Netherlands	2	2	2	100	2
Qatar	2	2	2	100	3
Republic of Macedonia	2	1	1	100	1
Republic of Moldova	2	1	1	100	2
Serbia	2	1	1	100	1
Albania	1	1	1	100	1
Cameroon	1	2	2	100	1
China	1	1	1	100	1
Egypt	1	2	2	100	1
Netherlands-Antilles	1	3	3	100	1
Philippines	1	1	1	100	1
South Africa	1	1	1	100	1

articles. By using this process, Pharmacy Practice ensures that the reviewers have participated in research with similar characteristics to the study that they are asked to evaluate.[9] However, this selection process consumes more time due to lower task acceptance, which may delay the entire editorial process.[10]

Citations are the most commonly used measure for visibility and impact of a journal. Over the years, many different indexes of citations have been created, which indicates that this is a very controversial topic. Although these indexes have limitations that have been reported in the literature[11], the idea of counting citations remains valuable. However, the source of citation data for counting may be one of the more important

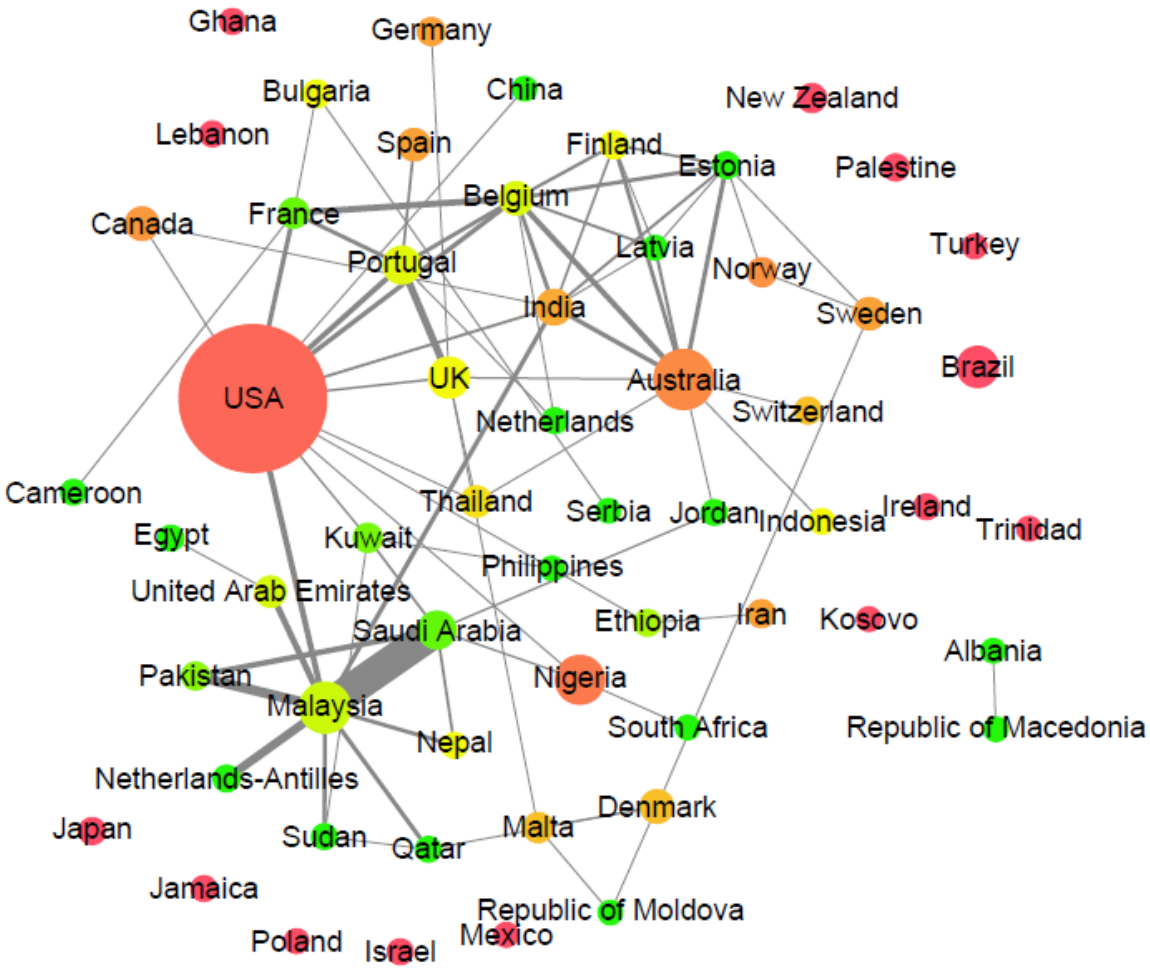

Figure 4. International collaboration network in Pharmacy Practice.

limitations for these indexes, resulting in significant differences between them.[12] In our analysis, we identified massive differences between the databases that we used as sources for citation data. As in previous studies, Google Scholar gathered the highest number of citations, although they may not all be from other scientific articles.[13-15] When comparing Scopus and Web of Science, Scopus' more comprehensive coverage of the field results in higher counts, which is consistent with previous comparisons.[13-15] The number of citations received increased during the study period, but the journal's indexation in PubMed Central in 2014 and subsequent inclusion in PubMed produced a significant increase in citations.

The incomplete coverage of some databases, such as Web of Science, in pharmacy practice becomes more evident when analyzing the journals that are cited in Pharmacy Practice more frequently. As expected, our analysis demonstrated that a journal more frequently cites journals in the same area of knowledge; the five most cited journals in 2015 were pharmacy journals. This means that the immediate consequence of missing references for Pharmacy Practice is a reduction in the Journal Impact Factor not only for other pharmacy journals but also for Pharmacy Practice itself. In a recent editorial, using data from the Web of Science, it became apparent that Pharmacy Practice should have appeared in the Journal Citation Reports with an Impact Factor of 0.754.[16] If self-citations were counted, this value should rise to 0.942.

Another measure of the visibility of a journal is the degree of internationalization. Pharmacy Practice published articles from authors representing 58 different countries. As is usually the case, the USA was the most prevalent country, confirming previous studies identifying it as the main contributor to medical sciences. [17,18] Not surprisingly, Australia stood in second place, thus demonstrating the advanced position of this country in pharmacy services and pharmacy practice in general. Despite the variety of different national affiliations, international collaborations are rare in Pharmacy Practice with less than 20% of papers written by international. Internationally collaborative articles enhance the efficiency and productivity of the team, facilitate the mobility of researchers, help reinforce communication, and allow results to be achieved in less time.[19-24] To better understand the essential features of cooperative practices that can lead to a future partnerships[19,21], network analysis may be a useful technique. The network built of the authors' national affiliations revealed 14 countries with no collaborative production, thus demonstrating the lack of robust and permanent international

collaborative links among authors publishing in Pharmacy Practice.

CONCLUSIONS

This analysis of the first decade of articles published in Pharmacy Practice serves as a valuable benchmark for enhancing the quality of the journal going forward. During this decade, Pharmacy Practice was admitted to major databases, resulting in increased growth in terms of both visibility and impact. The editorial process duration increased with the implementation of a more rigorous reviewer selection process. International collaboration among authors is low. Some of these patterns and trends deserve further analysis to identify potential tendencies in the field of pharmacy practice that may result in weaknesses for all journals in the field.

CONFLICT OF INTEREST

FF-L is editor-in-chief of Pharmacy Practice. No other conflicts of interest to declare.

References

1. World Health Organization. Good pharmacy practice (GPP) in community and hospital pharmacy settings [WHO/PHARM/DAP/96.1]. Geneve: WHO; 1996.
2. Wiedenmayer K, Summers RS, Mackie CA, Gous AG, Everard M. Developing pharmacy practice: A focus on patient care. Geneve: WHO; 2006.
3. Taylor K, Harding G. Pharmacy Practice. London: Taylor & Francis; 2001.
4. Almarsdottir AB, Granas AG. Social Pharmacy and Clinical Pharmacy - Joining forces. Pharmacy. 2016;4:1. doi:10.3390/pharmacy4010001
5. Minguet F, Salgado TM, van den Boogerd L, Fernandez-Llimos F. Quality of pharmacy-specific Medical Subject Headings (MeSH) assignment in pharmacy journals indexed in MEDLINE. Res Social Adm Pharm. 2015;11(5):686-695. doi: 10.1016/j.sapharm.2014.11.004
6. U. S. National Library of Medicine. MEDLINE, PubMed, and PMC (PubMed Central): How are they different? ; Available from: https://www.nlm.nih.gov/pubs/factsheets/dif_med_pub.html (accesed November 21, 2016).
7. Jacomy M, Venturini T, Heymann S, Bastian M. ForceAtlas2, a continuous graph layout algorithm for handy network visualization designed for the Gephi software. PLoS One. 2014;9(6):e98679. doi: 10.1371/journal.pone.0098679
8. Fernandez-Llimos F. Collaborative publishing: the difference between 'gratis journals' and 'open access journals'. Pharm Pract (Granada). 2015;13(1):593. doi: 10.18549/PharmPract.2015.01.593
9. Reid AJ. Canadian Family Physician's peer reviewers. Unsung heroes. Can Fam Physician. 1998;44:13-14.
10. Fernandez-Llimos F. Title: Assessment of the peer-reviewers' selection process in the journal Pharmacy Practice. Res Social Adm Pharm. 2014;10:E9-E10.
11. Liu XL, Gai SS, Zhou J. Journal Impact Factor: Do the Numerator and Denominator Need Correction? PLoS One. 2016;11(3):e0151414. doi: 10.1371/journal.pone.0151414
12. Falagas ME, Kouranos VD, Arencibia-Jorge R, Karageorgopoulos DE. Comparison of SCImago journal rank indicator with journal impact factor. FASEB J. 2008;22(8):2623-1628. doi: 10.1096/fj.08-107938
13. Minasny B, Hartemink AE, McBratney A, Jang HJ. Citations and the h index of soil researchers and journals in the Web of Science, Scopus, and Google Scholar. PeerJ. 2013;1:e183. doi: 10.7717/peerj.183
14. Zarifmahmoudi L, Kianifar HR, Sadeghi R. Citation Analysis of Iranian Journal of Basic Medical Sciences in ISI Web of Knowledge, Scopus, and Google Scholar. Iran J Basic Med Sci. 2013;16(10):1027-1030.
15. Trapp J. Web of Science, Scopus, and Google Scholar citation rates: a case study of medical physics and biomedical engineering: what gets cited and what doesn't? Australas Phys Eng Sci Med. 2016 [Epub ahead of print] doi: 10.1007/s13246-016-0478-2
16. Fernandez-Llimos F. Bradford's law, the long tail principle, and transparency in Journal Impact Factor calculations. Pharm Pract (Granada). 2016 Jul-Sep;14(3):842. doi: 10.18549/PharmPract.2014.03.842
17. El Ansari W, Afifi Soweid RA, Jabbour S. Geography of biomedical publications. Lancet. 2004;363(9407):489
18. Eldor J. Geography of medical publication. Lancet. 1993;341(8845):634.
19. Aleixandre Benavent R, Gonzalez de Dios J, Alonso Arroyo A, Bolanos Pizarro M, Castello Cogollos L, Gonzalez Alcaide G, Vidal Infer A, Navarro Molina C, Coronado Ferrer S, Gonzalez Munoz M, Malaga Guerrero S. [Co-authorship and Spanish pediatric scientific collaboration networks (2006-2010)]. An Pediatr (Barc). 2013;78(6):410. doi: 10.1016/j.anpedi.2013.01.002
20. Glänzel W. Coauthorship patterns and trends in the sciences (1980-1998) :A bibliometric study with implications for database indexing and search strategies. Library Trends. 2002;50:461-73.
21. Gonzalez-Alcaide G, Alonso-Arroyo A, Gonzalez de Dios J, Sempere AP, Valderrama-Zurian JC, Aleixandre-Benavent R. [Coauthorship networks and institutional collaboration in Revista de Neurologia]. Rev Neurol. 2008;46(11):642-651.
22. Nabout JC, Parreira MR, Teresa FB, Carneiro FM, Cunha HF, Ondei LS, Caramori SS, Soares TN. Publish (in a group) or perish (alone): the trend from single- to multi-authorship in biological papers. Scientometrics. 2015;102(1):357-364.
23. Zare-Farashbandi F, Geraei E, Siamaki S. Study of co-authorship network of papers in the Journal of Research in Medical Sciences using social network analysis. J Res Med Sci. 2014;19(1):41-46.
24. Athanasiou T, Patel V, Garas G, Ashrafian H, Hull L, Sevdalis N, Harding S, Darzi A, Paroutis S. Mentoring perception, scientific collaboration and research performance: is there a 'gender gap' in academic medicine? An Academic Health Science Centre perspective. Postgrad Med J. 2016;92(1092):581-586. doi: 10.1136/postgradmedj-2016-134313