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A decade of publishing in Pharmacy Education: A content analysis

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Abstract

Background: The journal *Pharmacy Education* has published articles in the education field of pharmacy for over a decade. This period has seen changes in pharmacy and educational practice, as well as the journal publishers and editorial team.

Aims: The aim of the current article was to review the publishing content of the journal to inform future direction.

Method: Articles were extracted from a 12 year period (2000 – 2011) from the journal's inception. Data from the downloaded articles were extracted and analysed for content. Descriptive analyses were performed focusing particularly on the research reporting.

Results: Analysis revealed that the volume of publishing varied considerably over the 12 year period. Most principal authors were from 'Western' settings, particularly the United Kingdom; about 1/3 of research articles involved some level of collaboration. Most principal authors were based in the academic setting; very few articles appeared to have received funding.

Conclusion: A greater focus needs to be paid to the international audience. Improvements in quality of the journal may include a stabilisation of the numbers of annual publications and a greater proportion of experimental research. There is an emerging imperative for pharmacy educators in the practice setting to increase the dissemination and publication of educational development and research; all pharmacy educators are challenged with seeking funding to support their activities.

Keywords: *Pharmacy Education, content analysis, publishing*

Introduction

The journal *Pharmacy Education* (http://pharmacyeducation.fip.org) is an international peer-reviewed, open-access online publication of the International Pharmaceutical Federation (FIP) endorsed and supported by the World Health Organisation (WHO) and the European Association of Faculties of Pharmacy (EAFP). Following a simple registration process, articles are available to download from the website.

The journal has been publishing since the year 2000; the original publisher was the Taylor and Francis Group, then Informa Healthcare, and most recently, from 2009, FIP. In just over a decade since the journal was first published there have been some significant changes in pharmacy practice and education, and this is reflected in the journal content. Until January 2012 the journal published articles under various categories including original research, programme and assessment descriptions, short reports, essays and opinions, conference proceedings, book reviews, 'in focus', keynote lectures, country reports, editorials, and specific 'education articles'. Besides publisher changes there have also been editorial changes, and it has been important to review the journal content to inform any new direction and focus, both in publishing and reporting pharmacy education research but also in editorial decision making and review.

This descriptive research article outlines the journal content over the last decade and focuses on reported research and programme and assessment descriptions in pharmacy education.

Method

Articles from the year 2000 until 9th December 2011 were downloaded from the *Pharmacy Education* journal website. The content was extracted into a Microsoft Excel data frame by four researchers. Based on the methodology of a literature analysis reported by Anderson *et al.,* (2008), data were extracted from the published articles. This included the year of publication, article title, author names, primary affiliated organisation name, other affiliated organisation names, location (country or region) of first author, the research or study setting as appropriate, listed keywords, whether funding or financial support was acknowledged or reported, article type, if research the type of research defined simply as descriptive or experimental. Data fields were then categorised into the number of authors, number of keywords, number of references, primary author affiliation type, and whether the article submission was a collaboration between different organisations. A collaboration was defined as two separate institutions or organisations, for example, authors from two different Schools of Pharmacy publishing together or an

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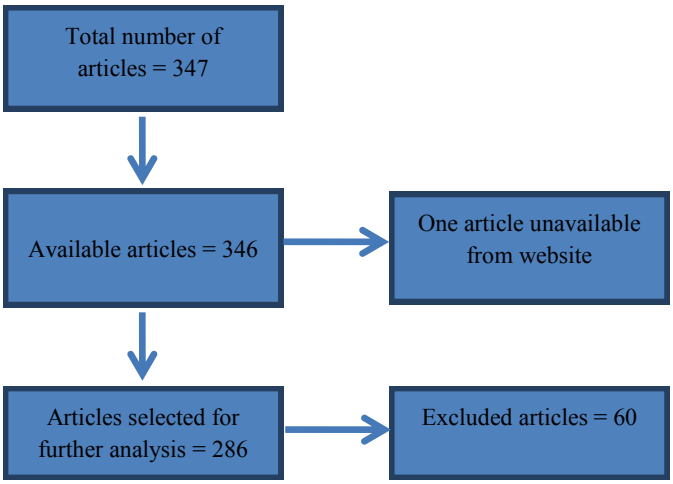
author from a School of Pharmacy publishing with an author from a hospital setting. Articles submitted by authors in different departments or units from the same root organisation were not considered collaborations. If the article title was not explicit in stating the category of publication, the article was defined by researchers as 'original research', 'programme and assessment description', or 'short reports'.

Following extraction into Excel, the data was corrected for errors by one author (TR), for example, to remove any duplications and account for missing data. Data were imported into the computer program Statistical Package for Social Sciences (SPSS, version 12), and analysed for content using descriptive analyses. In bivariate analyses, chi-squared test (χ^2) was reported for nominal cross-tabulations and Kruskal Wallis test (χ^2) was used for non-parametric comparisons.

Results

Of the 347 articles published on the website, one was unavailable to download (Figure 1). The remaining 346 articles were a mixture of article types but predominantly original research (43.8%), programme and assessment descriptions (28.5%), short reports (10.1%), essays and opinion (6.3%) and conference proceedings (3.2%; Table I).

Figure 1: Extraction and selection of articles for data analysis



Publications had a strong bias towards a number of countries including the United Kingdom, United States, Australia, Canada and New Zealand (Figure 2). Publishing by year was also highly variable with the highest peak in 2007 (50 articles; Figure 3).

The type of content of submissions were then analysed; articles categorised as original research, programme and assessment descriptions, and short reports were selected for further analysis (n=286, 82.7%). Of these publications 53.1% were defined by the current authors as original research (Table II), and the affiliation of the principal author was most commonly with an academic institution (92%) though submissions were also made from secondary care bodies (4.2%), societal groups and, separately, government bodies (1.7%), and examining bodies (0.3%). approximately one-third of articles (35.3%) were defined by the current authors as collaborations; funding was reported by 18.9% of authors; and research as defined in this article was most often descriptive (92.3%) compared to experimental.

Table I: Reported articles by article type

	Frequency	Percent
Original research	152	43.8
Programme and assessment descriptions	99	28.5
Short reports	35	10.1
Essays and opinion	22	6.3
Conference proceedings	15	4.3
Book reviews	11	3.2
In focus	6	1.7
Keynote lectures	3	0.9
Country Reports	1	0.3
Editorials	1	0.3
Education articles	1	0.3
Not available	1	0.3
Total	347	100

Analysing by article type (N=286; Table II), there was a significant trend for the greatest average number of authors involved in original research (3.51 authors per article) and the least average number involved in short reports (2.66 authors per article). In addition, there was a similar trend for the greatest number of cited references in original research and the least in short reports. Whilst there was a strong significant association suggesting that principal academic authors were more involved in original research compared with publications submitted from other sectors, the researchers considered the data to be insufficient to affirm this. Finally, there was also a significant trend to suggest that original research was more likely to be experimental whereas short reports and programme and assessment descriptions were more likely to be descriptive.

Discussion

A number of conclusions can be taken from this content analysis of the journal publications. This article represents the first publication from the Department and future School of Pharmacy in the University of Namibia. However, although *Pharmacy Education* is an international journal, there appears to be a greater bias in favour of publications from 'Western' contexts. This may partly be due to the editorial team, until recently, being based solely in the United Kingdom. It may also be that there are limited submissions from non-Western authors and that those submissions are less likely to be of the required quality. Standards of English may be a barrier, or there may even be an editorial bias in favour of submissions from certain countries. To address this imbalance, a review of the editorial team has been instigated to encourage submissions from the broader international audience by having part of the editorial team based in sub-Saharan Africa – where there is the greatest shortage of pharmacists. In addition, the journal is advocated at international fora including the FIP Congress, the Academy of Pharmaceutical Sciences conference in South Africa, and the Pharmacy Education Symposium due in 2013.

Figure 2: Percentage of first author of published articles and research setting by country of origin

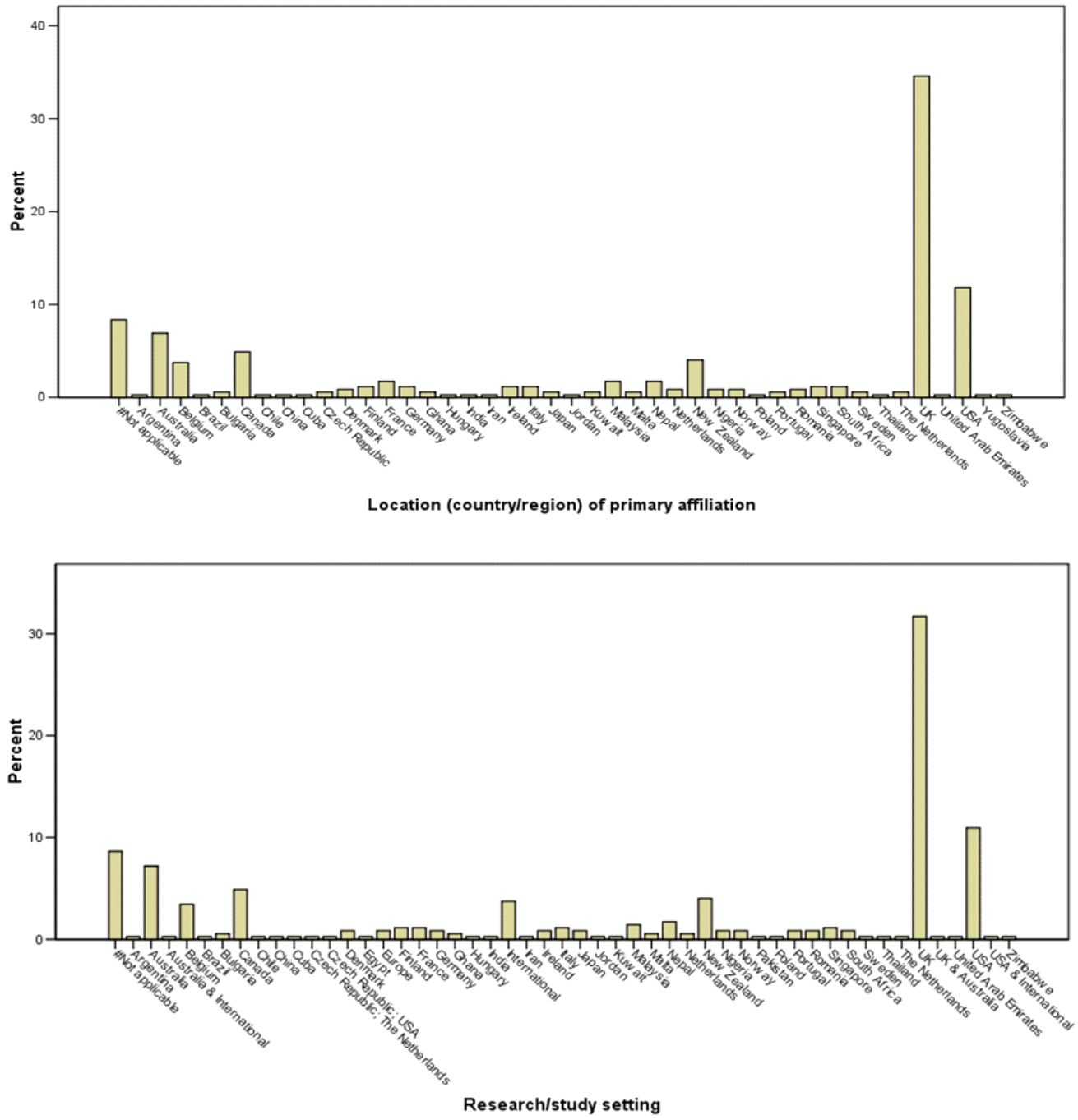


Figure 3: Annual trends in published articles

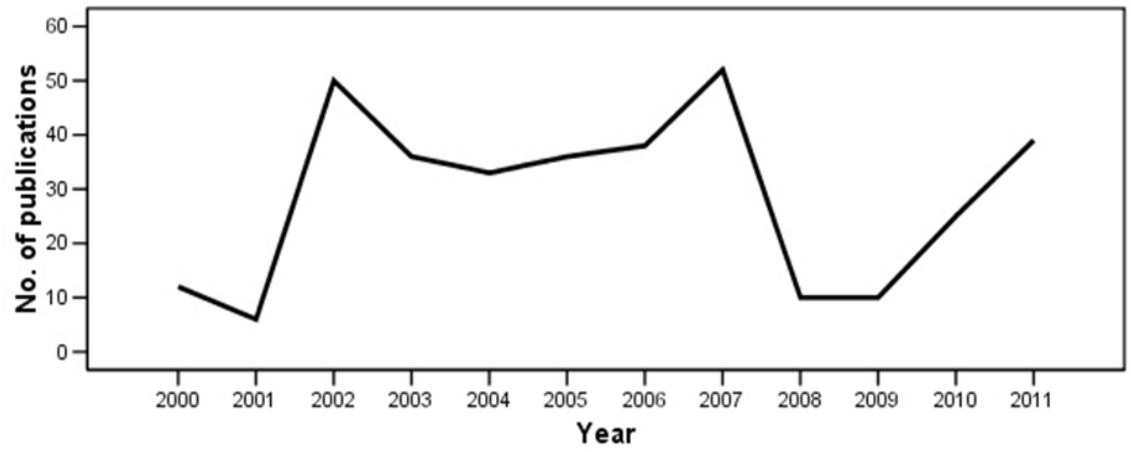


Table II: Bivariate analyses of article descriptors against article type N=286)

	Original research	Programme and assessment description	Short report	Statistical significance
	Number (percentage of total)			
Author primary affiliation: Academic (versus all other)	139 (48.6)	97 (33.9)	27 (9.4)	χ^2=29.1**
Collaboration: Number 'Yes'	62 (21.7)	30 (10.5)	9 (3.1)	NS
'No'	90 (31.5)	69 (24.1)	26 (9.1)	
Funding: Number 'Yes'	30 (10.5)	20 (7.0)	4 (1.4)	NS
'None stated'	122 (42.7)	79 (27.6)	31 (10.8)	
Research type: 'Descriptive'	135 (47.5)	95 (33.5)	34 (12.0)	χ^2=8.9*
'Experimental'	17 (6.0)	3 (1.1)	0 (0)	
Number of authors: Mean number	3.51	3.37	2.66	χ^2=8.5*
Number of keywords: Mean number	4.29	4.29	3.57	NS
Number of references: Mean number	18.7	15.43	10.46	χ^2=27.8**

***p* <0.01; ****p* <0.001; NS = Not Significant**

It is clear that the majority of authors are from the academic setting. However, as the move towards practice-based learning gathers momentum it is hoped that there will be a greater proportion of submissions from other sectors, such as primary and secondary care where much education and educational research takes place. What is encouraging in this respect is that over one-third of publications appear to involve some sort of collaboration – though this may still be predominantly collaborations between academic institutions. It also appears that publication of articles in the journal are to a large extent unfunded. This may reflect the low priority of funding for educational research and activities or, perhaps less plausible, that authors with little funding are more likely to submit to a free-access journal that does not charge authors to publish.

Finally, the finding that very little of the published research is experimental in nature poses a challenge to pharmacists and related cadres involved in education. The proportion of experimental to descriptive research could be interpreted as a quality indicator where experimental research is perceived as more robust. However, this more likely reflects the trend for educational research to usually be descriptive. Certainly, there are ethical and pragmatic issues with conducting research of an experimental nature in education. Nevertheless, educationalists should also be encouraged to experiment where there is insufficient evidence to direct a particular educational activity or strategy. The alternative scenario is not researching experimental education but rather simply incorporating new methods and philosophies without evidence to support their initiation.

This research has a number of limitations. The analysis could be criticised for being superficial in that the content of the publications was not reported in more depth. In this instance however, the lack of depth may be justified by the breadth of the research since all articles published since the inception of the journal up to and including 2011 were included. A smaller follow-up study could analyse in greater depth more recent publications to better inform the reader. Secondly, the authors made no attempt to compare with other journals that publish pharmacy education research. Though this was a deliberate decision, as the editorship was interested primarily in the content of *Pharmacy Education* journal, it would be appropriate to compare with the content of other journals.

In conclusion, whilst the authors consider that *Pharmacy Education* journal makes a significant contribution to the reported literature in the field of education, greater efforts will need to be made to broaden the content and authorship of the journal. In particular, there is an imperative to ensure that all pharmacy educators have access to quality assured dissemination; it is increasingly clear that professional development, in relation to both the global workforce and pharmaceutical services needs, has to be founded on educational progress. This in turn needs a globally active and vibrant developmental literature base.

References

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