

Medical Literature Imprinting by Pharma Ghost Writing: A Scientometric Evaluation

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Introduction

Misappropriation of authorship, honorary or ghost authorship, undermines academic publishing with a substantial proportion of peer-reviewed medical journals targeted (Flanagin, 1998). Pharmaceutical companies pay professional writers or medical communication companies to produce papers whilst paying other scientists or physicians to attach their names to these papers before they are published in medical or scientific journals. This ghost management is meant to support the marketing of drug products (Sismondo, 2007). Companies use this strategy to communicate competitive message, promote unproven off-label uses, and mitigate perceived drug risks (Fugh-Berman, 2010). Publication planning strategy with fraudulent practices were revealed through internal company communications in the course of the well-known Neurontin® litigation case (Vedula, 2012). Even though ghostwriting realized by pharmaceutical companies has been reported, it remains necessary to measure to what extent ghostwritten articles have impacted medical literature. Healy and Catell (2003) started to answer this question with a sample of 16 ghostwritten articles about a peculiar antidepressant. This pioneering analysis should be extended to a larger collection of ghostwritten articles as well as studied for a longer period of time.

Method

Pharma ghostwriting has been documented initially through 3 original papers: first, D. Healy and D. Cattell reported 16 ghostwritten articles in 2003, later on, A.J. Fugh-Berman (2010) reported 23 new cases, finally in 2012, Vedula and colleagues identified 13 more ghost written publications. Based on legal documents, from US district court following class action and lawsuit against pharmaceutical companies concerning several molecules: estrogen (Prempo®/Premarin®, Wyeth), sertraline (Zoloft®, Pfizer), gabapentin (Neurotin®, Pfizer), and paroxetine (Paxil®, GSK), 40 more ghostwritten publications were identified. Therefore, a corpus of 92 publications were retrieved from Pubmed, Scopus or Web of Science databases, and subsequently analyzed for main bibliometric indicators. Descriptive statistics were done using Excel.

Result

A corpus of 92 ghostwritten articles was assembled, covering a period between 1997 and 2008. Two third of theses cases were published between 1998 and 2000. 79 different authors have been identified. While the vast majority of them were co-author of only one ghostwriting paper, 10 authors published two ghost papers and one signed three ghost papers (data shown on the poster). 82% of the identified authors were US academics. However, authors of 10 different countries were identified as representing the main drug pharma market with the noticeable exception of Germany and Japan. Among the different affiliation of the authors, only one pharmaceutical company was identified. Most of the institutions were university with affiliated medical school (data shown on the poster).

Ghostwritten articles were published by average productive author (h-index at the time of ghost publication date: mean=15.84), with some exceptions: Bondareff W, University of Southern California, (h-index=92), Seddon JM, Tufts Medical Center, (h-index=53), Freedman MA, Medical College of Georgia & Jermain DM, Pfizer (h-index= 2). Along the 10 years observation period, there is no noticeable variation in the productivity of the authors (data shown on the poster). Indeed average author h-index reach 29.13 in year 2013.

The corpus covers a large spectrum of medical specialties. However, it is interesting to point out that more than a third of ghostwritten papers concern psychiatry and mental illness (Figure 1).

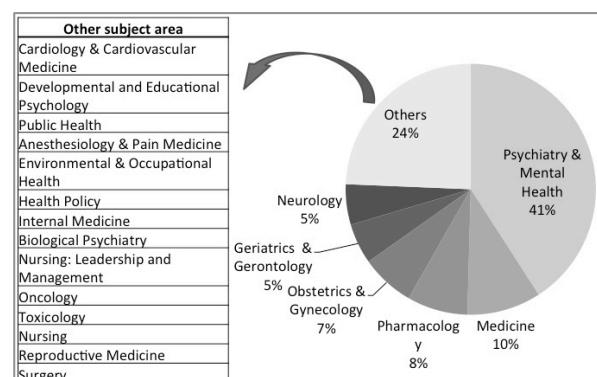


Figure 1. Distribution of ghost written articles by medical specialties.

Publication of ghost articles were scattered throughout 51 different journals. Among these source titles, there are four psychiatric journals, with various impact factor (IF), accounting for a third of the ghostwritten articles (Figure 2 and Table 1).

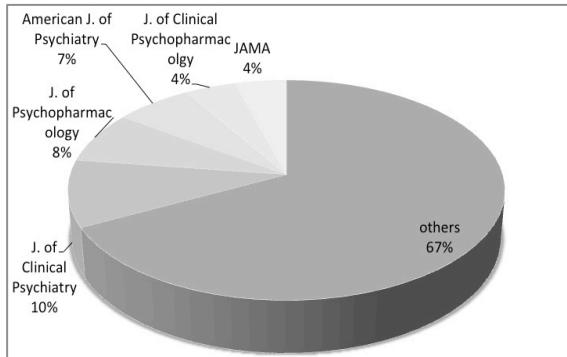


Figure 2. Distribution of ghost written articles by journals.

Table 1. List of the main journal publishing ghost written articles with their impact factor.

Journal	Ghost pub.	SJR impact factor at publication date
Journal of Clinical Psychiatry	9	1,787307692
Journal of Psychopharmacology	7	1,142571429
American Journal of Psychiatry	6	3,599
Journal of Clinical Psychopharmacology	4	1,6045
Journal of the American Medical Association	4	3,82875

The average IF of journals where ghostwritten articles are published is in the low-medium range (mean IF=2.51, median IF=1.81). Sometime, there are published in very low IF journal (ex: Climacteric IF=0.091).

Finally, the last evaluation concerns the number of year during which a ghostwritten article can be cited since the date of publication. (Figure 3; no ghostwritten article have been published in 2007). Year after year, ghostwritten articles have on an average 84% chance to be cited.

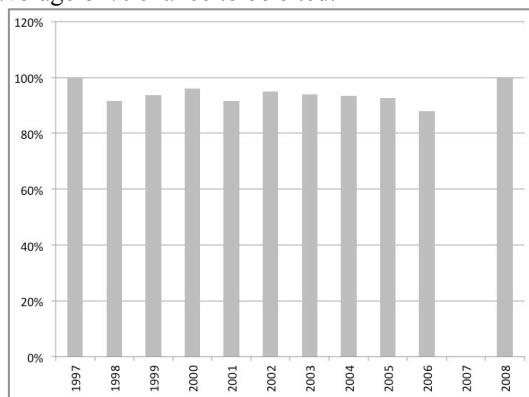


Figure 3. Probability of a ghost written articles to be cited once year since the publication.

On long range, the average ghostwritten article IF is much higher than the average journal IF. Indeed a ghostwritten article is about 10 times more cited

than any article published in the same journal (Table 2).¹

Table 2. Statistics difference between ghost written & journal article impact factors.

	Ghost Article impact factor	Journal impact factor
mean	7,24	2,68
max	68,13	8,73
min	0,31	0,09

Discussion

With this study, we have been able to conduct a bibliometric analysis on a large number of ghost articles, over a long period of time. Overall, ghostwritten articles are published by average productive author, in low IF journals; they are cited during a long period of time and therefore have a high number of citations (Table 3). Thus, ghostwritten articles might influence the medical community and its practice, which subsequently raises public health concerns.

Table 3. Main bibliometric indicators of ghost written articles.

	Journal impact factor	Ghost written article citations	Last year citation	Total number year citations	author h index
Mean	2,697	84,951	2013	13	29,731
Max	6,984	351	2014	16	68
Min	0,091	4	2008	8	4

Despite numerous declarations by medical journal editors and the conduct of ethics declared by professional medical writers, we would like to underline that none of these ghostwritten articles involved in lawsuit case have been retracted whilst companies have been sentenced by Justice.

Moreover the efficiency of ghostwriting publication strategy could be questioned since only a third of articles have an impact superior to what would be expected. Therefore the return on investment for the pharmaceutical industry might be very low, especially regarding the risk of litigation and the disclosure of such fraudulent marketing practices.

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