



# Duplicate Publication Rate Decline in Korean Medical Journals

Soo Young Kim,<sup>1\*</sup> Chong-Woo Bae,<sup>2\*</sup>  
Chang Kok Hahm,<sup>3\*</sup> and Hye Min Cho<sup>4</sup>

<sup>1</sup>Department of Family Medicine, Kandong Sacred Hospital, Hallym University College of Medicine, Seoul; <sup>2</sup>Department of Pediatrics, Kyung Hee University School of Medicine, Seoul; <sup>3</sup>Health Promotion Center, Chung-Ang University Hospital, Seoul; <sup>4</sup>Infolumi Co., Seongnam; \*Committee for Publication Ethics, the Korean Association of Medical Journal Editors, Seoul, Korea

Received: 8 September 2013  
Accepted: 18 November 2013

Address for Correspondence:

Chong-Woo Bae, MD

Department of Pediatrics, Kyung Hee University Hospital at Gangdong, 892 Dongnam-ro, Gangdong-gu, Seoul 134-727, Korea

Tel: +82.2-440-6130, Fax: +82.2-440-7175

E-mail: baecw@khnmco.or.kr

The purpose of this study was to examine trends in duplicate publication in Korean medical articles indexed in the KoreaMed database from 2004 to 2009, before and after a campaign against scientific misconduct launched by the Korean Association of Medical Journal Editors in 2006. The study covered period from 2007 to 2012; and 5% of the articles indexed in KoreaMed were retrieved by random sampling. Three authors reviewed full texts of the retrieved articles. The pattern of duplicate publication, such as copy, salami slicing (fragmentation), and aggregation (imalas), was also determined. Before the launching ethics campaign, the national duplication rate in medical journals was relatively high: 5.9% in 2004, 6.0% in 2005, and 7.2% in 2006. However, duplication rate steadily declined to 4.5% in 2007, 2.8% in 2008, and 1.2% in 2009. Of all duplicated articles, 53.4% were classified as copies, 27.8% as salami slicing, and 18.8% as aggregation (imalas). The decline in duplicate publication rate took place as a result of nationwide campaigns and monitoring by KoreaMed and KoreaMed Synapse, starting from 2006.

**Keywords:** Publishing Ethics; Duplicate Publication as Topic; Periodicals as Topic; Trends; Korea

## INTRODUCTION

According to the updated recommendations of the International Committee of Medical Journal Editors (ICMJE), “duplicate publication is publication of a paper that overlaps substantially with one already published, without clear, visible reference to the previous publication” (1). The threshold of substantial overlapping is variably defined by different professional groups. For example, editors of influential cardiothoracic journals defined duplication as a result of: employing similar hypotheses and methodologies, reporting the same sample sizes and results, listing common authors, and presenting no or little new information (2). Generally, the practice of duplicate publications is unethical because it skews citation analyses, flaws evidence in meta-analyses, wastes reviewers’ and editors’ precious time and publishers’ resources, and shatters the integrity of research reporting (2, 3).

The rate of duplicate publications has been examined in a few studies from different subject categories. The estimated rate ranged from 1.39% to 28.2% across clinical journals (4-10). Moreover, initial systematic evaluation of evidence processing revealed that 17% of randomized controlled trials and 40% of systematic reviews were published repetitively (11, 12). In 2012, an analysis of 2,047 retractions of articles indexed in PubMed found that duplicate publication became one of the leading causes of retractions in recent years (13).

On a national scale, our initial evaluation of 455 Korean original research papers indexed in the KoreaMed database in 2004

yielded the incidence of duplicate publication of around 6% (14). To calculate the exact rate of duplication in national journals, it is essential to search through the most comprehensive country-based database of biomedical literature. KoreaMed is one such database for Korea. The database is maintained by the Korean Association of Medical Journal Editors (KAMJE) with support from the Korean Academy of Medical Science (15). The Committee for Health Technology Planning and Evaluation of the KAMJE has been running KoreaMed since December 1997 to ease access to local medical journals. In addition, there is the KoreaMed Synapse database which is a digital archive and reference-linking platform for Korean medical journals launched by KAMJE in November 2007 (15).

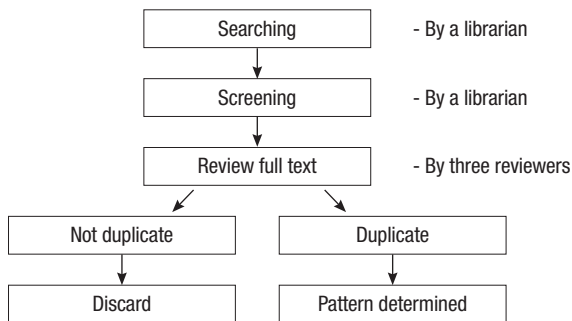
Several recent cases of breach of publication ethics in Korea highlighted the importance of adhering to the standards of publishing ethics and preventing scientific misconduct. One of the major steps towards implementing national ethical standards was the organization of the Committee for Publication Ethics within KAMJE in 2006. The committee has already positioned itself as a regulatory structure for maintaining publication ethics standards in Korea.

The KAMJE claimed that duplicate publication was the most common form of scientific misconduct and took the lead in a campaign against it in 2006. As part of this campaign, the Association examined the incidence rate and pattern of duplication in Korean medical articles indexed in KoreaMed in 2004.

The aim of the current study is to analyze trends in duplicate publishing of local medical articles indexed in the KoreaMed

**Table 1.** Criteria of duplicate publication and acceptable secondary publication (1, 2)

Criteria of duplicate publication	Criteria of acceptable secondary publication
The hypothesis is similar	The authors have received approval from the editors of both journals
The numbers or sample sizes are similar	The priority of the primary publication is respected by a publication interval of at least one week
The methodology is identical or nearly so	The paper for secondary publication is intended for a different group of readers
The results are similar	The secondary version faithfully reflects the data and interpretations of the primary version
At least one author is common to both reports	There is a footnote and title on the title page of the secondary version
No or little new information is made available	

**Fig. 1.** Flow chart for evaluation of duplicate publications in this study.

database between 2004 and 2009. We also aimed to evaluate the effectiveness of the KAMJE's campaign against scientific misconduct.

## MATERIALS AND METHODS

A detailed study methodology is presented in our previous report (14). Briefly, we reviewed 5% of the original research articles which were indexed in KoreaMed from January 2004 to December 2009. The search was performed on 1st November each year from 2007 to 2012 by one librarian. The indexed articles were retrieved using Microsoft Excel's random sampling function. Review articles, letters, and editorials were excluded. After that, we searched through PubMed and Google Scholar using keywords from the title and names of the first, second and last authors of each indexed article. To retrieve Korean medical articles which were not covered by PubMed, we performed additional searches through KMBase and KoreaMed employing the same search terms. The librarian picked suspicious for duplication items. Three authors reviewed full texts of the screened articles regardless of whether the index and the returned article were or were not duplicates according to the criteria of duplication (2) and acceptable secondary publication (1) (Table 1). If all the three authors (reviewers) agreed that the suspicious articles were duplicates, no further action was taken. When there was a disagreement, the decision was taken based on opinions of the two authors in agreement (Fig. 1).

We considered different patterns of duplicate publication which were earlier described by von Elm et al. (12) as copying, salami slicing (fragmentation) and aggregation (imalas). Articles falling under these categories were tracked by their publi-

**Table 2.** Duplicate publication rates in Korean medical journals (2004-2009)

Parameters	Screened articles by year						Total
	2004	2005	2006	2007	2008	2009	
Screened articles*	455	467	460	462	466	505	2,815
Suspicious articles <sup>†</sup>	49	46	43	38	19	23	218
Duplicate articles <sup>‡</sup>	27	28	33	21	13	6	12.8
Duplicate publication rates (%)	5.9	6.0	7.2	4.5	2.8	1.2	4.5

\*5% of articles were chosen by random sampling from original articles indexed in KoreaMed. <sup>†</sup>According to at least one expert (librarian). <sup>‡</sup>Finally confirmed as duplicates.

cation year. The number of duplicate publications and the direction of publication of the index articles and duplicates were also recorded.

## RESULTS

### Trends in duplicate publication rates in Korean medical journals (2004-2009)

Out of 455, 467, 460, 462, 466, and 505 articles indexed in 2004, 2005, 2006, 2007, 2008, and 2009, respectively, 49, 46, 43, 38, 19, and 23 original research articles were selected for screening. After a thorough check of full texts of the screened articles, 27, 28, 33, 21, 13, and 6 items were confirmed as duplicates (Table 2). Prior to and at the start of the campaign against duplicate publications (2004-2006), the duplication rate was relatively high in the range from 5.9% to 7.2%. After the campaign (2007-2009), the duplication rate steadily declined to 1.2% in 2009 (Fig. 2).

### Duplicate publication patterns in Korean medical journals (2004-2009)

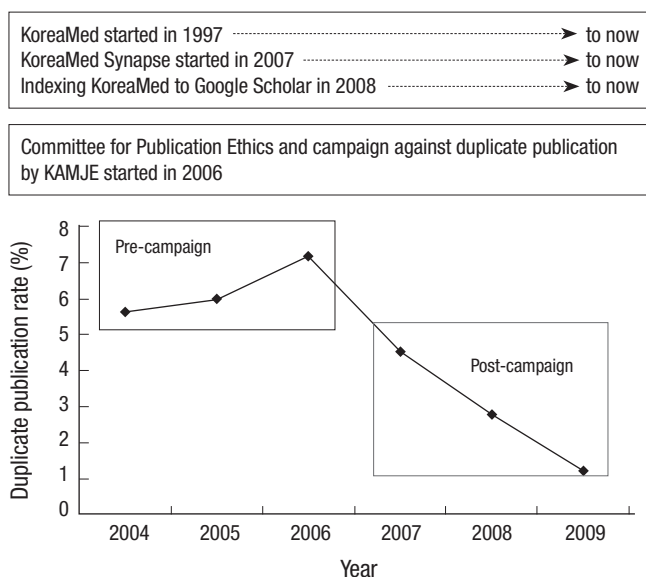
Of the 133 duplicate articles, 71 (53.4%) were copied, 37 (27.8%) were salami sliced, and 25 (18.8%) were aggregated (imalas). The percentage of copied duplicates decreased from 65.5% in 2004 to 42.9% in 2008, but the rate of salami-sliced items increased from 13.8% in 2004 to 42.9% in 2008 (Table 3). Of the 128 index articles, one was duplicated four and three times (Table 4).

Of the 133 duplicate articles, 72 (54.1%) were initially published in local journals and duplicated in international journals; 42 (31.6%) were published in local journals and duplicated in the same or other local journals; and the remaining 19 articles (14.3%) were published in international journals and duplicated in local ones. The shift from local to international sources

was apparent during the study period (Table 5).

## DISCUSSION

We found that the national duplicate publication rate in Korean



**Fig. 2.** The campaign for preventing duplicate publications started in 2006, and the duplication rate decreased from 2007-2009 as compared to 2004-2006. KAMJE, Korean Association of Medical Journal Editors.

**Table 3.** Patterns of duplicate publication in Korean medical journals (2004-2009)

Patterns of duplicate	No. (%) of articles by year						
	2004	2005	2006	2007	2008	2009	Total
Copy	19 (65.5)	18 (64.2)	13 (37.1)	10 (47.6)	6 (42.9)	5 (83.3)	71 (53.4)
Salami	4 (13.8)	5 (17.9)	12 (34.3)	9 (42.9)	6 (42.9)	1 (16.7)	37 (27.8)
Imalas	6 (20.7)	5 (17.9)	10 (28.6)	2 (9.5)	2 (14.2)	0 (0)	25 (18.8)
Total	29 (100)	28 (100)	35 (100)	21 (100)	14 (100)	6 (100)	133 (100)

**Table 4.** Frequency of duplicate publications in Korean medical journals (2004-2009)

Frequency	No. (%) of articles by year						
	2004	2005	2006	2007	2008	2009	Total
Double	26 (96.3)	28 (100)	31 (93.9)	21 (100)	12 (92.3)	6 (100)	124 (96.9)
Triple	0 (0)	0 (0)	2 (6.1)	0 (0)	1 (7.7)	0 (0)	3 (2.3)
Quadruple	1 (3.7)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0.8)
Total	27 (100)	28 (100)	33 (100)	21 (100)	13 (100)	6 (100)	128 (100)

**Table 5.** Directional patterns of the primary to duplicate publication in Korean medical journals (2004-2009)

Directions	No. (%) of articles by year						
	2004	2005	2006	2007	2008	2009	Total
Local→international	13 (44.8)	16 (57.2)	19 (55.3)	11 (52.4)	10 (71.4)	3 (50.0)	72 (54.1)
Local→local	14 (48.3)	6 (21.4)	12 (34.3)	6 (28.6)	2 (14.3)	2 (33.3)	42 (31.6)
International→local	2 (6.9)	6 (21.4)	4 (11.4)	4 (19.0)	2 (14.3)	1 (16.4)	19 (14.3)
Total	29 (100)	28 (100)	35 (100)	21 (100)	14 (100)	6 (100)	133 (100)

medical journals was relatively high throughout the pre-campaign period (2004-2006): 5.9% in 2004, 6.0% in 2005, and 7.2% in 2006. The rates dropped to 4.5% in 2007, 2.8% in 2008, and 1.2% in 2009 during the active campaigning by our medical editors (Fig. 2).

The current study suggests that positions of publishing ethics in the medical sciences have strengthened in Korea. And we can now proudly claim that the ethics campaign involving experts from the KAMJE, the National Research Foundation and many Korean societies achieved its goals.

The KAMJE runs KoreaMed and KoreaMed Synapse for its member journals (15). The KAMJE assigns the Digital Object Identifier (DOI) prefixes provisionally and the Synapse links articles using the CrossRef system. The operation of these two national databases forms a basis for improved visibility of Korean medical articles. Importantly, KoreaMed and Synapse were instrumental for tracking duplicate publications in local journals and curbing, at least partly, the problem of unethical publications.

The widely known case of Hwang Woo Suk, which surfaced as an appalling scientific misconduct in 2006, affected the whole Korean scientific community. As a consequence, experts and public at large became more concerned over the issues of duplicate publications and other forms of unethical conduct such as self-plagiarism. The KAMJE launched a campaign which also involved other professional societies. As part of the campaign, the Committee on Publication Ethics of the KAMJE issued a position statement on duplicate publication and authorship. Several guidelines were developed and a series of educational meetings arranged. In 2008, Google Scholar started to cover data from the KoreaMed database. And that also allowed to properly organize actions against duplicate publications.

The Korean Committee for Publication Ethics, established in 2006, now successfully regulates medical ethics in Korea. The committee accepted that duplicate publication is a serious threat

to the medical community, and published a guide book of publication ethics in 2008, which was revised in 2013 (16). Additionally, all known local cases of duplicate publication were categorized and published in a separate book in 2011 (17). Both publications are essential references on publication ethics for Korean biomedical specialists. Educational activities included five large meetings on publication ethics organized by KAMJE and dozens of individual trainings and public relation events

The Korean Committee for Publication Ethics has processed more than 120 cases referred from various institutions since 2006. The KAMJE's website now provides updates on publication ethics through the links to the relevant pages of the ICMJE and the Committee on Publication Ethics (COPE).

Over the past years, the Korean Research Foundation with the government's support was also actively engaged in educational activities on research and publication ethics and contributed greatly to the national achievements in publication ethics. Our data on a decline in duplicate publication rates are a clear evidence of the success of joint national efforts.

Our study has some limitations. First of all, we searched Korean medical journals indexed in KoreaMed only, and it is possible that journals indexed in other databases have different rates and patterns of duplication. As of August 2013, 205 journals are indexed in KoreaMed. However, 100 more Korean medical journals remain out of coverage by this database. Second, the results from 2009 were investigated in 2012. The rate of duplicate publications might have been low because of this relatively short time interval. Third, the present study did not analyze duplication in different academic fields, subject categories, and authors' posts. Further studies are warranted to explore these issues.

In conclusion, the declined from 5.9% to 1.2% rate of duplicate publications in Korean medical journals reflects the impact of the publication ethics awareness campaign. The results of this study, monitored by KoreaMed and KoreaMed Synapse, point to the positive changes in national ethics.

## ACKNOWLEDGMENTS

The authors would like to thank Professor Chang-Ok Suh (President of KAMJE, Department of Radiation Oncology, Yonsei University College of Medicine, Korea), Professor Sung-Tae Hong (Vice President of KAMJE, Department of Parasitology, Seoul National University College of Medicine, Korea), and Professor Armen Yuri Gasparyan (Departments of Rheumatology and Research and Development, Dudley Group NHS Foundation Trust, Russells Hall Hospital, West Midlands, UK) for their contributions by critical review of this paper.

## DISCLOSURE

The authors have no conflicts of interest to disclose.

## ORCID

Soo Young Kim <http://orcid.org/0000-0002-3205-9408>

Chong-Woo Bae <http://orcid.org/0000-0002-0965-5674>

## REFERENCES

1. International Committee of Medical Journal Editors. *Recommendations for the conduct, reporting, editing, and publication of scholarly work in medical journals*. Available at [http://www.icmje.org/publishing\\_d.html](http://www.icmje.org/publishing_d.html) [accessed on 19 December 2013].
2. Cho BK, Rosenfeldt F, Turina MI, Karp RB, Ferguson TB, Bodnar E, Waldhausen JA. *Joint statement on redundant (duplicate) publication by the editors of the undersigned cardiothoracic journals*. *Ann Thorac Surg* 2000; 69: 663.
3. Kim SY. *Double submission, double publication*. *Korean J Fam Med* 2012; 33: 69.
4. Blancett SS, Flanagan A, Young RK. *Duplicate publication in the nursing literature*. *Image J Nurs Sch* 1995; 27: 51-6.
5. Mojon-Azzi SM, Jiang X, Wagner U, Mojon DS. *Redundant publications in scientific ophthalmologic journals: the tip of the iceberg?* *Ophthalmology* 2004; 111: 863-6.
6. Rosenthal EL, Masdon JL, Buckman C, Hawn M. *Duplicate publications in the otolaryngology literature*. *Laryngoscope* 2003; 113: 772-4.
7. Chennagiri RJ, Critchley P, Giele H. *Duplicate publication in the Journal of Hand Surgery*. *J Hand Surg Br* 2004; 29: 625-8.
8. Barnard H, Overbeke AJ. *Duplicate publication of original manuscripts in and from the Nederlands Tijdschrift voor Geneeskunde*. *Ned Tijdschr Geneesk* 1993; 137: 593-7.
9. Arrivé L, Lewin M, Dono P, Monnier-Cholley L, Hoeffel C, Tubiana JM. *Redundant publication in the journal Radiology*. *Radiology* 2008; 247: 836-40.
10. Cheung VW, Lam GO, Wang YF, Chadha NK. *Current incidence of duplicate publication in otolaryngology*. *Laryngoscope* 2013. doi: 10.1002/lary.24294.
11. Tramèr MR, Reynolds DJ, Moore RA, McQuay HJ. *Impact of covert duplicate publication on meta-analysis: a case study*. *BMJ* 1997; 315: 635-40.
12. Von Elm E, Poggia G, Walder B, Tramèr MR. *Different patterns of duplicate publication: an analysis of articles used in systematic reviews*. *JAMA* 2004; 291: 974-80.
13. Steen RG, Casadevall A, Fang FC. *Why has the number of scientific retractions increased?* *PLoS One* 2013; 8: e68397.
14. Kim SY, Hahm CK, Bae CW, Cho HM. *Duplicate publications in Korean medical journals indexed in KoreaMed*. *J Korean Med Sci* 2008; 23: 131-3.
15. Suh CO, Oh SJ, Hong ST. *Korean Association of Medical Journal Editors at the forefront of improving the quality and indexing chances of its member journals*. *J Korean Med Sci* 2013; 28: 648-50.
16. Korean Association of Medical Journal Editors. *Good publication practice guidelines for medical journals*. 2nd ed. Seoul: Academy, 2013, p1-118.
17. Bae CW, Kim SY, Huh S, Hahm CK. *Sample cases of duplicate publication*. Seoul: Xmlarchive, 2011, p1-116.