

How the retracted publications are managed and used? A South Korean case

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Introduction

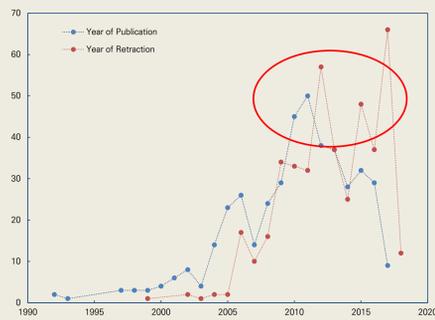
- What are the characteristics of retracted publication in Korea? Are the retracted publications constantly increasing? In what research areas and for what reasons were withdrawn? Are a few authors leading the retraction as the “repeat offenders”(Grieneisen & Zhang, 2012)?
- Is there a notice of retraction from a bibliographic database? In WoS (Web of Science), the retracted publications are classified as “retracted publication” in document type (DT) or the title of article is marked with “Retracted article”. In KCI (Korea Citation Index), the retracted publication has a title beginning with “research misconduct article”. Unless the original article in the bibliographic database is clearly known to be a retraction, researchers may not know that the paper has been withdrawn and the retracted publications can be cited like any other articles (Teixeira da Silva & Bornemann-Cimenti, 2017; Fang et al., 2012).
- One of ways of disseminating retracted publication after withdrawal is that retracted publication is cited by another researcher or by oneself. Teixeira da Silva & Dobranszki(2017) regarded this citation of retracted publication as “an academic faux pas” despite the variety of motives and reasons for citation.

Data and methods

- We used Retraction Watch Database (retractiondatabase.org) instead of WoS to analyze the retracted publications of Korean authors. The reason is that the number of retracted articles of Korean authors was only 211 in WoS, but 438 in Retraction Watch Database (accessed March 18, 2018). The difference originates from their coverage, i.e. the Retraction Watch Database collects not only the retracted publications of journals but also the retracted publications of the conference proceedings.
- We collected 438 retracted publications from Retraction Watch Database. We removed duplicated data and searched WoS and KCI for verifying whether each retracted publication is listed and marked as the information of a ‘retracted’ in those databases. We built a single database for analysis (N=432) by combining the retrieved information from two databases and Retraction Watch Database.
- The retraction notice is announced in various databases, from publisher websites to bibliographic databases such as Web of Science or PubMed (Bakker and Riegelman, 2017). Although the retraction notices of the publishers or the full text files (e.g. PDFs) of retracted publication are very important, we have examined two bibliographic databases, Web of Science and KCI. Of the 432 retracted publications, 313 papers were searchable in Web of Science and 113 papers were indexed by KCI.

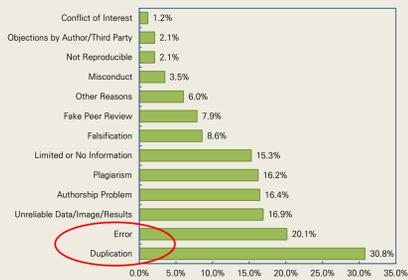
The characteristics of retracted publications in Korea

No. of retracted publications by year

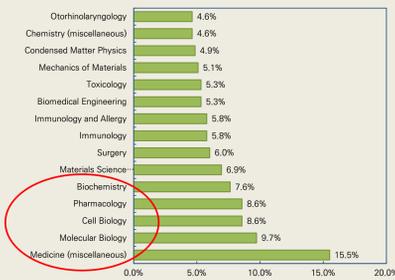


| Retraction year | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | Total | |
|-----------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|-----|
| 1999 | | | | | | | | | | | | | | | | | | | | | | 2 |
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| 2013 | | | | | | | | | | | | | | | | | | | | | | 1 |
| 2014 | | | | | | | | | | | | | | | | | | | | | | 1 |
| 2015 | | | | | | | | | | | | | | | | | | | | | | 1 |
| 2016 | | | | | | | | | | | | | | | | | | | | | | 1 |
| 2017 | | | | | | | | | | | | | | | | | | | | | | 1 |
| 2018 | | | | | | | | | | | | | | | | | | | | | | 1 |
| Total | | | | | | | | | | | | | | | | | | | | | | 432 |

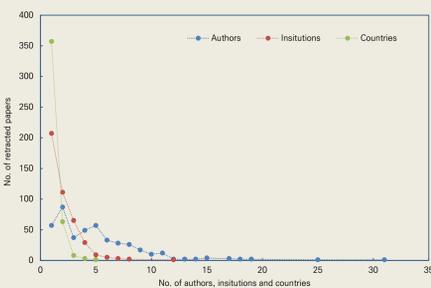
Reason of retraction



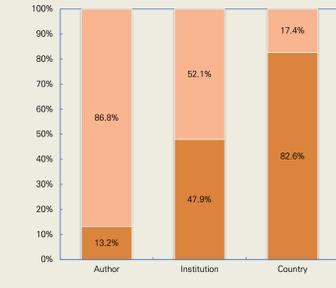
No. of retracted publications by field



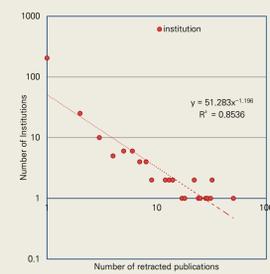
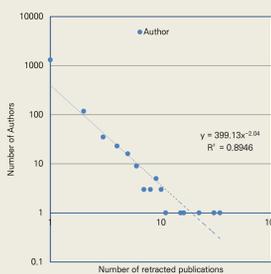
No. of authors/institutions/countries per article and number of retracted publications



Percent of the single or multi-authorships in authors, institutions and countries



Number of retracted publications per author/institution and number of authors/institutions



The left figures shows whether retractions are caused by “repeat offender” with full counting.

One author has 34 retracted publications and one institution has 50 retracted publications. This distribution is similar to a typical power-law distribution

The status managed by bibliographic database

Table 1. Retracted publications in WoS

| Indexed by WoS | Retraction Notification | No. of Publications | Average Time Delay between publication and retraction | Average Time Delay between retraction and present | Total Times cited | Average Times cited |
|----------------|-------------------------|---------------------|-------------------------------------------------------|---------------------------------------------------|-------------------|---------------------|
| Not Indexed | - | 119 | 3.60 | 4.78 | - | - |
| Indexed | No | 149 | 2.47 | 5.38 | 1,793 | 12.03 |
| | Yes | 164 | 2.34 | 5.66 | 3,079 | 18.77 |
| | Sub-total | 313 | 2.40 | 5.53 | 4,872 | 15.57 |
| Total | - | 432 | 2.73 | 5.32 | - | - |

Of 313 publications, 164 were announced with retracted publications. In other word, the retraction notice rate was only slightly over half (52.3%). (Table 1)

Table 2. Retracted publications in KCI

| Indexed by KCI | Retraction Notification | No. of Publications | Average Time Delay between publication and retraction | Average Time Delay between retraction and present | Total Times cited | Average Times cited |
|----------------|-------------------------|---------------------|-------------------------------------------------------|---------------------------------------------------|-------------------|---------------------|
| Not Indexed | - | 319 | 2.43 | 5.67 | - | - |
| Indexed | No | 111 | 3.59 | 4.39 | 607 | 5.47 |
| | Yes | 2 | 3.00 | 1.50 | 1 | 0.50 |
| | Sub-total | 113 | 3.58 | 4.34 | 608 | 5.38 |
| Total | - | 432 | 2.73 | 5.32 | - | - |

KCI is mainly indexing Korean journals and of the 113 retracted publications indexed by KCI, only 2 papers (1.8%) have the retraction notice. (Table 2)

The TC before and after retraction in WoS

- Of the 313 retracted publications that can be searched in WoS, 3 papers have the information on the times cited but have no the citing articles information. We collected the publication years of citing articles of each retracted publication (N=310) and compared the times cited before and after retraction except for the times cited of retraction year

Table 3. The TC (times cited) before and after retraction in WoS

| Retraction Notification | No. of Publications | Total TC before retraction | Total TC after retraction | Average TC before retraction | Average TC after retraction | Rate of Increase before/after retraction |
|-------------------------|---------------------|----------------------------|---------------------------|------------------------------|-----------------------------|------------------------------------------|
| No | 147 | 551 | 689 | 3.75 | 4.69 | 25.05% |
| Yes | 163 | 1,049 | 1,171 | 6.44 | 7.18 | 11.63% |
| Total | 310 | 1,600 | 1,860 | 5.16 | 6.00 | 16.25% |

Table 3 shows the total and average times cited by whether or not there is a retraction notice. This result implies that the times cited is a tendency to increase even after retraction regardless of retraction notice.

Table 4. Increase/decrease of TC (times cited) before and after retraction by retraction notice

| TC | Retraction Notification | | Total |
|-----------|-------------------------|--------------|--------------|
| | No | Yes | |
| Decrease | 46 (31.3%) | 34 (20.9%) | 80 (25.8%) |
| No change | 36 (24.5%) | 44 (27.0%) | 80 (25.8%) |
| Increase | 65 (44.2%) | 85 (52.1%) | 150 (48.4%) |
| Total | 147 (100.0%) | 163 (100.0%) | 310 (100.0%) |

In table 4, the times cited after retraction increased more than before retraction in 150 papers (48.4%), but only in 80 papers (25.8%) the times cited after retraction decreased more than before retraction.

- In conclusion, we found that the retraction notice on the original article did not work well in the bibliographic databases. Furthermore, even if the retraction is announced, it does not have a significant impact on the citation by another researcher.
- We need a rigorous research on the citation patterns and the context of the citations that has been neglected, in particular, the citation of retracted publications, irreproducible results and the predatory journal articles.