Compliance of retraction notices for retracted articles on mental disorders with COPE guidelines on retraction

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The current study is aimed at assessment of compliance of retraction notices for articles on mental disorders with COPE guidelines and impact of open access on post-retraction citation of retracted articles on mental disorders. A bibliometric search was carried out for retraction notices for articles on mental disorders using PubMed. Twenty-four (43.63%) articles were retracted in the year 2010 or later and 31 (56.36%) were retracted before 2010. A significantly higher proportion of articles cited at least once post-retraction were without a freely accessible retraction notice (chi square = 10.06, df = 1, P = 0.002). Open access status of the article did not influence the times (in months) to retraction after publication (U = 321.00, P = 0.73).

Keywords: Mental disorders, open access, PubMed, retraction notice, *Web of Science*.

THE Committee on Publication Ethics (COPE) established in 1997, provides advice to editors and publishers on all aspects of publication ethics. It also provides a framework to handle cases of research and publication misconduct[1]. Several major publishers have signed up as COPE members. COPE requires the members to follow the code of conduct for journal editors. COPE has the mandate to investigate complaints when members have not followed this code[1].

The National Library of Medicine (NLM), USA has defined retraction as 'a statement from the author, institution, editor or publisher stating that an article has significant issues based on unsubstantiated or falsified data or pervasive errors'[2]. COPE has described retraction as 'a mechanism for correcting the literature and alerting readers to publications that contain such seriously flawed or erroneous data that their findings and conclusions cannot be relied upon'[3].

COPE issued guidelines to journal editors on retraction in the year 2009. It prescribed the editors on various issues related to retraction, including when the article should be retracted; how the retraction notice should be framed; purpose of retraction; form of retraction; publications to be retracted, and authority with responsibility to issue the retraction notice.

Studies have observed that the number of retracted articles has increased over the past few years[4–7]; it has, in fact, grown ten-fold over the past decade[8]. Few studies have commented on the nature of retraction notices issued by journals[9–14]. Similarly, impact of retraction of articles on future citations has been studied[4,5,11,13,15,16]. Also, it has been proposed that offering open access to the articles and the retraction notices can help reduce post-retraction citation of the retracted articles[17].

The present study is aimed at assessment of compliance of the retraction notices for articles on mental disorders with the COPE guidelines, and the impact of open access on the post-retraction citation of such retracted articles.

A bibliometric search was carried out using PubMed database of the National Center for Biotechnology Information, NLM, USA. The total number of articles on mental disorders published and retracted from the PubMed was ascertained. The Medical Subject Headings (MeSH) terms used for search for the retracted literature on mental disorders were 'Mental Disorders' AND 'Retracted Publication'. The term 'Mental Disorders' lists all mental and behavioural disorders and hence search using this term yields all publications on mental and behavioural disorders. The search was restricted to English language human studies. The literature till (and including) 15 September 2012 was included in the analysis.

An article was considered to be 'retracted' for the purpose of the present study, if it was explicitly retracted or withdrawn via a notice, erratum, corrigendum, editorial note, or other such notifications in PubMed[2]. The data were analysed using licensed SPSS ver. 21 (IBM Inc., Chicago). Group comparisons were made for the articles retracted before 2010 and during or after 2010 to assess the adherence to COPE guidelines. Group comparisons

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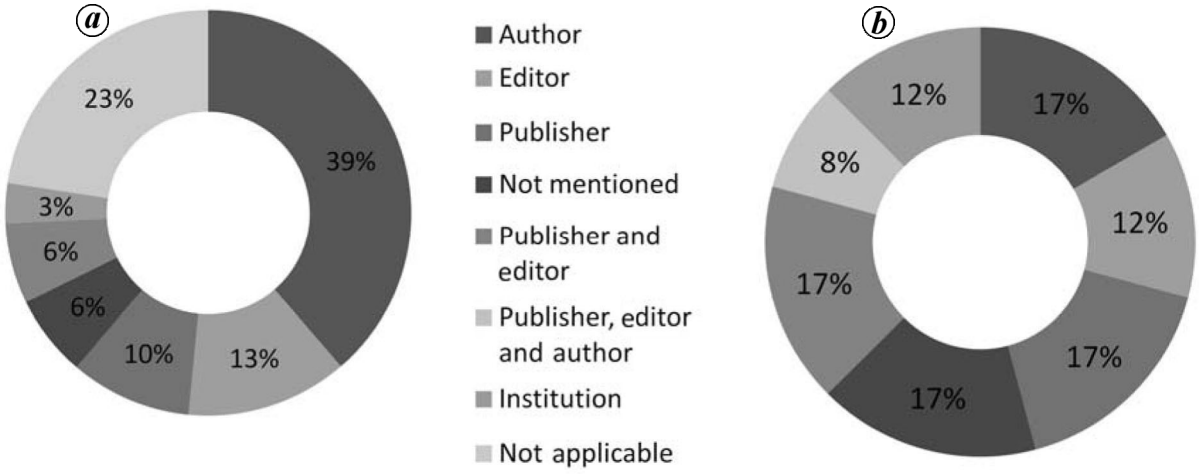

Figure 1. Authority making retraction of the articles published (***a***) before 2010 and (***b***) 2010 or later.

Table 1. Difference in articles retracted before 2010 and those retracted during or after 2010 for different variables

		Retraction year		
		Before 2010 *N* (%)	2010 and later *N* (%)	
Mention of who retracted the article	Yes	29 (93.54)	20 (83.33)	Chi square = 1.45, d*f* = 1, *P* = 0.38[#]
	No	2 (6.45)	4 (16.66)	
Availability of original article	Yes	29 (93.5)	23 (95.7)	Chi square = 0.11, d*f* = 1, *P* = 0.73[#]
	No	2 (6.5)	1 (4.3)	
Mention of retraction notice with the original article	Yes	22 (71)	18 (75.0)	Chi square = 1.37, d*f* = 1, *P* = 0.50
	No	9 (29)	6 (25.0)	
Free accessibility of retraction notice	Yes	10 (32.3)	11 (48.8)	Chi square = 0.51, d*f* = 1, *P* = 0.47
	No	21 (67.7)	13 (54.2)	
Availability of retraction notice in *Web of Science*	Yes	23 (74.2)	18 (75)	Chi square = 0.005, d*f* = 1, *P* = 0.94
	No	8 (25.8)	6 (25)	

[#]Fisher's exact test was used.

were also made for articles offered as open access and those not offered as open access. Non-parametric tests (chi square test, Mann–Whitney *U* test) were used for this purpose. The value of statistical significance was kept at $P < 0.05$ for all tests. The search resulted in a total of 68 retracted articles on mental disorders. Twelve of these were excluded (13 were not related to mental and behavioural disorders and 1 was of non-English language). The final analysis included 55 articles.

Retracting authority was mentioned in 53 (96.36%) of the articles. Fifty-two (94.54%) of the retracted articles were available online. Fifteen (27.27%) articles failed to put the retraction notice along with the retracted article. Retraction notice was not freely available for 34 (61.81%) articles. Retraction notice was also not available in the *Web of Science* (*WoS*) for 14 (25.45%) articles. Twenty-four (43.63%) articles were retracted in 2010 or later and 31 (56.36%) were retracted before 2010. Retracting authority was mentioned in 29 (93.54%) of the articles retracted before 2010 and 24 (100%) articles retracted during or after 2010. The number of articles retracted by different authorities is given in Figure 1.

Twenty-nine (93.5%) articles retracted before 2010 and 23 (95.7%) articles retracted during 2010 or later were available online. Nine (29%) articles retracted before 2010 and 6 (25%) articles retreated during or after 2010 failed to put the retraction notice along with the retracted article. Retraction notice was not freely available for 21 (67.7%) articles published before 2010 and 13 (54.2%) articles retracted during or after 2010. Think that we can write it as of all 14 articles where retraction notice was not available in the *WoS*, 8 (25.8%) of the articles retracted before 2010 and 6 (25%) of the articles retracted during or after 2010. However, there was no significant difference between the articles retracted before 2010 and those retracted during or after 2010 for any of these variables (Table 1).

Free accessibility to the retraction notice impacted the citation of the retracted articles post-retraction in *WoS*. While only 7 (12.72%) of the retracted articles cited at least

once post-retraction had a freely accessible retraction notice, 26 (47.27%) of the retracted articles cited at least once post-retraction were without a freely accessible retraction notice. The difference was statistically significant (chi square = 10.06, df = 1, P = 0.002).

Of the 55 retracted articles, 23 (41.81%) were open access through PubMed Central. Only five (9.09%) of the retracted articles cited at least once in the *WoS* post-retraction were open access in PubMed Central. On the other hand, 28 (50.90%) of the retracted articles cited at least once in the *WoS* post-retraction were non-open access in PubMed Central. This difference was not statistically significant (chi square = 3.29, df = 1, P = 0.07). However, open access status of the article did not influence the time (in months) to retraction after publication (U = 321.00, P = 0.73).

COPE guidelines on retraction were released in 2009. The impact of these guidelines was studied by comparing the adherence of the retracted literature on mental disorders published before and after (including) 2010. COPE guidelines on retraction recommend that the retraction notice should mention the retracting authority. Proportion of articles mentioning the retracting authorities reduced after the guidelines were issued. The guidelines put the onus of retraction on the editors. These guidelines also mention that 'editors may retract publications…even if all or some of the authors refuse to retract the publication themselves'. In fact, only 25% of the retraction notices published during or after 2010 stated authors as the authority carrying out the retraction. The rest of the articles was not retracted by the authors themselves. This suggests that many authors refuse to accept the decision to retract and the retractions are made by the editors, publishers or institutions. Previous studies have also concluded that retraction by parties other than authors is increasing[13]. A study found that specific authorities making retraction were mentioned in the notices for 82.9% of 4232 retraction notices[5]. Around 56% of these retraction notices mentioned that one of the authors was making the retraction. Around 59% of the retraction notices explicitly mentioned either the publisher, journal or editor was making the retraction.

The guidelines also recommend that retracted articles should not be removed from electronic archives. However, not all retracted articles were available online. Around 6% of the articles retracted before 2010 and 4% retracted during or after 2010 were no longer available online. COPE guidelines recommend that the retraction notice should be linked to the retracted article in all electronic versions. Twenty-nine per cent of the articles retracted before 2010 and 26% retracted during or after 2010 did not meet this recommendation. Decullier *et al.*[14] reported that 18% of the retracted articles had been completely deleted.

COPE guidelines recommend that the retraction notice should not be behind access barriers or available only to subscribers. Rather, it should be freely available to all readers. Marginally more retraction notices were made freely available during or after 2010 compared to before 2010, but still almost half and quarter of the retraction notices were not freely available in PubMed and *WoS* respectively. However, Decullier *et al.*[14] failed to retrieve only 3.6% of the retraction notices. They also reported that only around 87% of the retraction notices was available either through open access or through their institution's subscription.

The reason for retraction was not cited in around 15% of the retraction notices. Previous studies have found this rate to vary from 5% to 18% (refs 4, 12–14, 18). One of the articles was retracted in 2007 because of authorship conflicts. COPE guidelines recommend against retraction in cases that 'require a change of authorship but there is no reason to doubt the validity of the findings'. None of the articles retracted during or after 2010 was because of authorship conflicts.

There seems to be little impact of the COPE guidelines on retractions as the retraction notices during and post-2010 did not differ significantly from the pre-2010 retractions for any of these recommendations.

Free accessibility of the retraction notice was found to have a significant impact on the post-retraction citation of the retracted article. Significantly lesser number of retracted articles with freely available retraction notices was cited by another article post-retraction compared to retracted articles for which retraction notice was not freely accessible. COPE guidelines also recommend free accessibility of the retraction notice.

The need to develop aggressive means of notification about retraction to the scientific community has been expressed earlier[13]. Steen[4] found that around 32% of the retracted articles did not have any mention of the retraction notice. Decullier *et al.*[14] failed to find any mention of retraction notice with the retracted article in 22% of the cases. Post-retraction citation can be used as a measure of effectiveness of retraction mechanism. Retracted articles continue to be cited post-retraction. Grieneisen and Zhang[5] reported that the 1837 retracted articles in *WoS* were collectively cited 41,562 times. A high post-retraction citation indicates that the retraction notices are not reaching the researchers and readers. Additionally, presence of multiple electronic copies of the articles poses a challenge to put retraction notices with all of them[19]. It has also been hypothesized that open access to articles facilitates the detection of research and publication misconduct and hence expedites the retraction process[17]. This hypothesis was supported in the current study as a significantly greater number of articles cited in *WoS* post-retraction were non-open access in PubMed Central. However, open access did not influence the time to retraction post-publication.

There is limited literature that has explored the nature of retraction notices[10]. While retraction in medical literature

has gained increasing attention over the past few years, the retraction notices have not been studied in details[4–6,11,12,15,16]. Apparently, publication of COPE guidelines has made little impact in this regard. No significant changes were observed for any of the recommendations made by COPE guidelines with regards to retraction notices. This is an important finding in light of the fact that many major publishing groups endorse and follow COPE guidelines and recommendations. Journal editors need to look into this issue. A previous study failed to find a retraction policy for majority of the journals analysed[20]. Additionally, open access to published literature can help cut down post-retraction citation of the retracted articles. However, the pros and cons of open access literature remain debatable.

The present study had certain limitations. It uses PubMed database for identification of retraction notices. Although it is a commonly used database for searching biomedical literature, it is a much smaller repository compared to certain other databases[21]. There seems to be little impact of the COPE guidelines on retractions as the retraction notices during and post-2010 did not differ significantly from the pre-2010 retractions for any of these recommendations. It is advisable for journals to adhere to COPE guidelines on retraction. This will help ensure a uniform system of retraction and retraction notification across biomedical journals. Also possible impact of open access on retraction notice dissemination needs to be studied systematically.

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