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## Promoting health sciences journal content with Web 2.0: A snapshot in time

by [Sandra L. De Groot](#)

### Abstract

This study examined if health sciences journals incorporate Web 2.0 technologies that can be used to disseminate journal content using tools such as RSS feeds, Facebook, Twitter, and other social bookmarking tools. The study also examined if open access journals used Web 2.0 technologies more than traditional journals. Most journals offer RSS feeds and over half allowed readers to share journal content through social bookmarking tools. Approximately one quarter of journals had Facebook or Twitter accounts promoting journal content. Traditional journals were more likely to use Web 2.0 technology than open access journals.

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### Introduction

Countless journals have made it possible for readers to register to receive e-mail alerts for new content to a journal, or to allow the reader to e-mail the citation of an article directly from a journal to themselves or a colleague. Now, many journals are taking advantage of Web 2.0 technology to share journal content. Journals may offer RSS or even Facebook or Twitter feeds so readers may keep up-to-date on the current journal content, without going directly to the journal. Additionally, micro-information about an individual article may be shared by a reader or author with others through social bookmarking Web sites such as Twitter, Facebook, CiteULike, Connotea, and more. One potential advantage of this technology is it increases the publishers', authors', and readers' ability to disseminate information about journal content. Further, because Open Access (OA) journals are freely accessible to all, potentially there is an increased advantage to using social bookmarking technology to disseminate the content for OA journals. Not only are researchers and readers who see a posting of an article shared through social bookmarking able to read micro-information about a given OA article, but they will be able to access the full text of the article itself, further increasing the likelihood the article will be read. This would not be true of traditional journals where a subscription would be required to view the article, limiting admittance for those who do not have access or cannot afford access to full text.

The purpose of this study is to examine how health sciences journals are incorporating Web 2.0 technology that can be used to disseminate journal content. Some of the questions this study seeks to answer include how many health sciences journals use Facebook, Twitter and RSS feeds to promote the journal content and how many health sciences journals allow readers to share information about specific articles on social bookmarking tools such as Facebook, Twitter, Delicious, CiteULike, Connotea? This study will also compare the use of Web 2.0 technologies by open access and traditional journals.

### Use of Web 2.0 in journals

Web 2.0 has the potential to transform scholarly communication and the dissemination of scholarly information. It is difficult for clinicians, researchers, and students to keep up-to-date with the content from multiple journals. For example, a 2004 study estimated it would take 29 hours per workday or 351 hours per month for a physician to keep up with the primary care literature (Alper, 2004). However, publishers can use Web 2.0 technologies to promote and disseminate content in new and convenient ways. One way in which some journals use Web 2.0 technology is to allow readers to subscribe to RSS (RDF Site Summary or Really Simple Syndication) feeds in order to follow new content from a Web site where the feed originated. This means that the follower does not need to regularly return to the original journal to look for new content, but instead can view new content as it is added to the journal by going to one location such as Twitter, Facebook or a RSS feed reader (or aggregator) to read the micro-blogs posted about published articles. The micro-information (or micro-blog) posted about an article typically includes brief content such as the title, partial abstract, and URL to the original source. If an article is of particular interest, a follower can click the link provided with the posting and go directly to the article on the Web. Of course, a follower will need an individual or institutional subscription to read the full article if it is not available through open access. In all of these cases (Facebook, Twitter, RSS Readers), once a feed for an article comes to a follower, the follower can always "re-tweet" or "share" specific content so those following the follower will also see a micro-blog for the article.

The specifics for subscribing to journal feeds differ for Twitter, Facebook, and RSS feeds. For example, if one has a Twitter account, one can choose to "follow" the postings of a journal's Twitter page, and the postings of that journal's Twitter page will appear as content on one's own Twitter account. Alternatively, one can "like" a journal's Facebook page on Facebook and as a result, new postings from the "liked" page will appear on one's own Facebook page. Thus an individual could keep track of a journal by following a journal's feeds on their own Facebook page. For journals offering RSS feeds, followers of the RSS feeds are able to have the tables of contents (TOC), most popular articles, or recently published articles of several journals displayed in one location using an RSS reader (*i.e.*, Google Reader, My Yahoo!, etc.). This means several journals can be followed simultaneously from one page. Because feeds are often kept for a while or until they are read, a follower can browse a list of new journal article publications from several journals at their leisure.

Another way journals use Web 2.0 is by allowing readers to use social bookmarking to share micro-information about an article published in a given journal with colleagues, friends, or others that have selected to be connected through the some tool they are using (*i.e.*, following on Twitter, "friending" on Facebook). So even if someone does not subscribe to the feeds of a journal directly (RSS feeds, Twitter, or Facebook), individuals can still see potential articles of interest as a result of other individuals sharing an article with them using Web 2.0 technology. Social bookmarking or sharing refers to the use of Web 2.0 technology to post micro-blogs about an article to systems such as Twitter, Facebook, social bookmarking tools (Delicious, GoogleBookmarks, Digg, etc.) or other social bookmarking services more focused on organizing and sharing academic publications (CiteULike, Connotea, etc.).



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### Literature review

Studies have found scholars are embracing Web 2.0 for keeping up-to-date with scholarly literature and the latest news in their fields. In an unpublished survey of health sciences faculty, 13 percent of respondents indicated keeping up-to-date on journal content through RSS feeds and three percent indicated doing so through Twitter updates, compared to 61 percent who have the table of contents of journals sent to their e-mail account (De Groot, *et al.*, 2011). According to Nielsen/NetRatings, "RSS users visit three times as many news Web sites as non-users" and they also visit the sites more frequently (Nielsen/NetRatings, 2005). A 2010 survey of scholars revealed more than a third of the respondents (35.2 percent) were using Twitter in some way, which was up from 30.7 percent from the previous year (Faculty Focus, 2010). Those scholars currently using Twitter noted their most common uses of Twitter were "to share information with peers" and "as a real-time news source." Another 2010 study found 8.9 percent of researchers were using social media tools for social tagging and bookmarking (CIBER, 2010). Social media tools were also being used for collaborative authoring (62.7 percent), conferencing (48.3 percent), scheduling and meeting tools (41 percent), and social networking (27 percent). This study also noted about 79.7 percent of researchers from all disciplines use social media tools, although within the health sciences it is slightly lower with about 74.8 percent of the researchers using social media tools.

Priem and Costello (2010) examined how and why scholars post on Twitter by examining 46,515 tweets from 28 scholars. This study found six percent of the tweets were "Twitter citations" which were defined "as direct or indirect links from a tweet to a peer-reviewed scholarly article online". Priem and Costello also examined first- and second-order citations. In second-order citations, an intermediate Web page would display between the tweet and the target of the tweet. These intermediate Web pages would often be blog posts or news articles describing and linking to the original source. Priem and Costello found scholars did not always follow the second-order citations to the original source, if they could get the information they needed from the blog or news item itself. As one tweet reader stated "reading the paper itself

I might not be able to get anything extra from it anyways." Participants in the study also suggested why they tweeted second-order citations. For one participant, re-tweeting secondary pages worked better for their workflow because in using an RSS reader to follow several hundred blogs each day, it was easier to tweet from their blog items of interest, rather than from the original sources. For another participant in the study, they would tweet about second-order citations because "it helped them get around paywalls to articles." In this case, the participant would blog about or link to a blog about an article of interest "because you can provide a little more substance that way, even to people who do not have access to it behind the paywall." To this point, Priem and Costello noted:

While 56% of first-order links were open access, only 25 percent of second-order links were free to access. This significant difference ( $p < .001$ ,  $\chi^2 = 12.86$ ) suggests scholars may prefer to link directly to the article when it is open access but will resort to second-order links to bypass paywall restrictions. Participants were attracted to open-access articles for Twitter citations; [as one respondent] said "I would certainly be much more likely to link to things if they were more readily available." [1]

Therefore, it would seem journals could potentially benefit from increased readership, and authors could potentially benefit from increased impact, by providing and using technology on the journal's Web site that facilitates sharing journal content to social bookmarking sites.

The potential for additional peer review is also enabled through the use of social bookmarking tools. Readers may want to share a journal article because of the positive interest they took in an article. Other readers may share a journal article to critique and review it. Mandavilli (2011) notes that rather than years passing before an article may be negatively critiqued in what used to be private conversations, readers are now commenting on papers within hours through blogs, Twitter, and other social media sites.

Studies have also started to examine metrics, such as the number of downloads and the number of social bookmarks for an article, with the number of citations an article has received. Using Web 2.0 technology to assess the value of the scholarship or more specifically, "the creation and study of new metrics based on the Social Web for analyzing, and informing scholarship" is known as "altmetrics" (Priem, *et al.*, 2010). Bar-Ilan, *et al.* (2012) found the number of social bookmarks for an article in Mendeley was significantly correlated with the number of citations for the article in the citation database, Scopus. Eysenbach (2011) found the number of tweets about a research article, within the first three days of an article's publication, can predict which articles will be highly cited. Articles that were tweeted highly on Twitter were more likely to be cited more often in scholarly papers later. Eysenbach notes, "Correlation is not causation, and it harder to decide whether extra citations are a result of the social media buzz, or whether it is the underlying quality of an article or newsworthiness that drives both the buzz and the citations — it is likely a combination of both."

Puustinen and Edwards (2012) examined the correlation between the number of tweets for an article with the number of times an article has been downloaded. Following a tweet by the National Centre for Research Methods in the U.K. about a recently published paper, two researchers set out to watch the number of times the article was downloaded as it was tweeted and re-tweeted. Several times, the number of downloads spiked following a recent Twitter post. Within the first 24 hours of the first tweet, it was re-tweeted 10 times to over 5,000 followers, shared 135 times through other social medial tools (e-mail, micro blogging, social bookmarking), and downloaded 861 times. At the time of the blog post sharing the results of the study, the article had been downloaded 3,936 times and shared 518 times using social media tools.

As noted above, Web 2.0 technology is being incorporated into scholarly journals. This study seeks to measure the use of Web 2.0 technology in health sciences journals. How has the pervasiveness of Web 2.0 technology and use influenced what Web 2.0 features are available on online journal sites?



## Methodology

A list of health sciences journals to be studied was developed using the following sources. These sources were selected as a means of creating a list that was both manageable and of quality.

**Abridged Index Medicus:** Journals listed on the Abridged Index Medicus list (AIM) were included in the study. The AIM list consists of a list of 119 journals indexed in PubMed considered the "core clinical journals" (National Library of Medicine, 2011).

**2010 Journal Citation Reports (JCR) — Science**

**Edition:** JCR rankings are based on the citation data found in Web of Science (WOS). WOS indexes only journals that have met specific criteria following an evaluation of a journal (Testa, 2012). The top 25 percent in the 2010 Impact Factor Rank were selected across the following disciplines: dentistry (20 out of 77 dentistry journals), nursing (20 out of 89 journals), and general and internal medicine (40 of 153 journals) (Journal Citation Reports, 2010). To ensure open access journals were included in the study, all open access journals included in JCR/WOS, within the above disciplines, were also incorporated in the study.

**SCImago Journal Rank (SJR):** The journals ranked by the SCImago Journal Rank are based on information, such as cited references, of the journals indexed in SCOPUS (SCImago, 2011). Journals are placed into quartiles based on their SJR rank, with the Q1 quartile including the journals with the highest rank and prestige. Journals in the subject areas of nursing (miscellaneous), dentistry, and internal medicine given a Quartile One ranking in the SCImago Journal Rank were included in the study.

The Directory of Open Access Journals (DOAJ) and information on the journals' home pages were used to determine which journals were open access (DOAJ, 2011). To examine a journal's use of Web 2.0 technology, each journal title was examined from the journal's home page. *UlrichsWeb Global Serials Directory* was consulted to find the journal's official home page (*Ulrich's Periodicals Directory*, 2011). Searches in Google were performed if Ulrich's information was not sufficient to find the journal's home page. URLs with aliases were selected over generic publisher URLs in Google. For example, the *Journal of Pain and Symptom Management* is published by Elsevier, but the journal has an official Web URL (<http://jpsmjournal.com/>). Once on the journal's home page, the journal was examined for the following details:

1. Was there a link to a Twitter or Facebook account? For journals without Twitter or Facebook links on the journals' home pages, searches were done in Twitter and Facebook to determine if the journals have Twitter or Facebook accounts. For journals with Twitter or Facebook accounts, the content of the posts on these social bookmarking sites was examined in addition to the number of followers and "likes".
2. Were RSS feeds available for readers to keep current with the journal?
3. Was there a way to share specific published articles with other individuals through the use of social bookmarking such as CiteULike, Connotea, Delicious, Facebook, Blogger, Twitter, Reddit, and StumbleUpon?

The data was originally collected between 18 November 2011 and 15 December 2011. The data was rechecked in March 2012 for errors and/or updates to the Web 2.0 technology offered through the journal so that current practices of the journals would be reflected in the study.



## Results

A total of 248 journals were examined; 42 were open access journals and 206 were traditional journals. Only about one quarter of the journals had Twitter (29 percent) or Facebook (27 percent) accounts compared to most journals having RSS feeds (87 percent). Over half of the journals (60 percent) allowed the readers to share individual journal articles through social bookmarking tools. Traditional journals were more likely to use Web 2.0 technology, compared to open access journals. The use of one type of Web 2.0 technology did not necessarily predict the utilization of another type of Web 2.0 technology. A more detailed summary of the findings is below.

### Twitter

Thirty-one percent of traditional journals had Twitter accounts for the journal, compared to 17 percent of open access journals (see [Table 1](#)). Overall, 32 percent of the journals had a link to a Twitter account from their homepages (see [Table 1](#)). However, only 25 percent of the journals had links from their journals' home pages to a Twitter account specifically for the journal. Seven percent had links to Twitter accounts, but the accounts were either for the society affiliated with the journal or for a collection of journals (archives, reviews). An additional ten journals had Twitter accounts for the journal, but there were no apparent links to the Twitter account from the journals' pages. A total of 29 percent of the journals had Twitter accounts specifically for the journal, independent of whether there was a link to the account from the journals' home pages. Most tweets posted for journals were about recent

articles published in the journals. Other tweet content included announcements for new issues or announcements for the most popular articles. A smaller number of tweets were news related to the journal but not specific to the content (*e.g.*, the whereabouts of a journal representative at a conference, society news, or health news of interest to readers).

**Table 1:** Twitter use by a sample of health sciences journals.

Note: \* Mean and median only determined from journals with Twitter accounts.

Twitter findings	All journals (N=248)	Traditional journals (N=206)	Open access journals (N=42)
Twitter link on journal home page	<ul style="list-style-type: none"> <li>• 25% (61) had link to Twitter account for the journal</li> <li>• 7% (18) had link to a Twitter account but not for the journal</li> </ul>	<ul style="list-style-type: none"> <li>• 27% (56) had link to Twitter account for the journal</li> <li>• 7% (14) had link to a Twitter account but not for the journal</li> </ul>	<ul style="list-style-type: none"> <li>• 12% (5) had link to Twitter account for the journal</li> <li>• 10% (4) had link to a Twitter account but not for the journal</li> </ul>
Twitter account for journal (not necessarily linked from journal)	<ul style="list-style-type: none"> <li>• 29% (71) had a Twitter account</li> </ul>	<ul style="list-style-type: none"> <li>• 31% (64) had a Twitter account</li> </ul>	<ul style="list-style-type: none"> <li>• 17% (7) had a Twitter account</li> </ul>
Number of tweets	<ul style="list-style-type: none"> <li>• Mean=588</li> <li>• Median=320</li> <li>• *(N=71)</li> </ul>	<ul style="list-style-type: none"> <li>• Mean=630</li> <li>• Median=350</li> <li>• *(N=64)</li> </ul>	<ul style="list-style-type: none"> <li>• Mean=202</li> <li>• Median=135</li> <li>• *(N=7)</li> </ul>
Twitter followers	<ul style="list-style-type: none"> <li>• Mean=2,497</li> <li>• Median=464</li> <li>• *(N=71)</li> </ul>	<ul style="list-style-type: none"> <li>• Mean=2,652</li> <li>• Median=574</li> <li>• *(N=64)</li> </ul>	<ul style="list-style-type: none"> <li>• Mean=1,066</li> <li>• Median=204</li> <li>• *(N=7)</li> </ul>

### Facebook

Twenty-nine percent of traditional journals had an active Facebook page for the journal, compared to 14 percent of the open access journals (see [Table 2](#)). Overall, 29 percent of the journals had links to a Facebook page from their home pages (see [Table 2](#)). However, only 24 percent of the journals had links from their journals' home pages to a Facebook page specifically for the journal. Five percent had links to a Facebook page, but the pages were either for the society affiliated with the journal or for a collection of journals. An additional three journals had active Facebook pages, but there were no apparent links to Facebook from the journals' pages. An additional 58 journals had Facebook pages but no activity on the page. These pages did not appear to have been created by someone affiliated with the journal, as the information used to create the journals' Facebook pages was taken directly from Wikipedia, as indicated by a reference to Wikipedia. The average number of "likes" for Facebook journal pages with no activity was 55. A total of 27 percent of the journals had active Facebook pages specifically for the journals, independent of whether there was a link from the journals' home pages. Most Facebook posts for journals were about recent articles published in the journals. Other posts often included announcements for new issues or for the most popular articles. A smaller number of posts were news items related to the journal but not specific to the content. Many had Facebook posts linking to posts on the journals' blog site.

**Table 2:** Facebook use by a sample of health sciences journals.

Note: \* Mean and median only determined from journals with active Facebook accounts.

Facebook findings	All journals (N=248)	Traditional journals (N=206)	Open access journals (N=42)
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Facebook link on journal home page	<ul style="list-style-type: none"> <li>• 24% (59) had link to Facebook account for the journal</li> <li>• 5% (13) had link to a Facebook account but not for the journal</li> </ul>	<ul style="list-style-type: none"> <li>• 28% (57) had link to Facebook account for the journal</li> <li>• 6% (12) had link to a Facebook account but not for journal</li> </ul>	<ul style="list-style-type: none"> <li>• 5% (2) had link to Facebook account for the journal</li> <li>• 2% (1) had link to a Facebook account but not for the journal</li> </ul>
Active Facebook account for journals	<ul style="list-style-type: none"> <li>• 27% (66) active accounts</li> </ul>	<ul style="list-style-type: none"> <li>• 29% (60) active account</li> </ul>	<ul style="list-style-type: none"> <li>• 14% (6) active account</li> </ul>
Facebook likes (for active journals)	<ul style="list-style-type: none"> <li>• Mean=5,655</li> <li>• Median=302</li> <li>* (N=66)</li> </ul>	<ul style="list-style-type: none"> <li>• Mean=6,569</li> <li>• Median=281</li> <li>* (N=60)</li> </ul>	<ul style="list-style-type: none"> <li>• Mean=115</li> <li>• Median=25</li> <li>* (N=6)</li> </ul>

### RSS feeds

Ninety-one percent of the traditional journals had an RSS feed for the journal compared to 67 percent of the open access journals (see [Table 3](#)). Eighty-eight percent of all journals had at least one RSS feed available for readers to keep up-to-date with the journal (table of contents or TOCs, new articles, or popular articles, in press) (see [Table 3](#)). Sixteen percent (40 journals) did not appear to have RSS feeds for the journals' TOCs. Eight of the 40 journals that did not appear to have RSS feeds for the journals' TOCs did have RSS feeds for something related to the journal (popular articles, in press, news). Journals that had Twitter or Facebook links on the journals did not necessarily appear to have RSS feeds for the journals' TOCs.

RSS feed findings	All journals (N=248)	Traditional journals (N=206)	Open access journals (N=42)
RSS feed (TOC or articles as published)	<ul style="list-style-type: none"> <li>• 84% (208) had TOC RSS feed</li> </ul>	<ul style="list-style-type: none"> <li>• 88% (181) had TOC RSS feed</li> </ul>	<ul style="list-style-type: none"> <li>• 64% (27) had TOC RSS feed</li> </ul>
RSS Feed Other (popular articles, in press articles, news)	<ul style="list-style-type: none"> <li>• 48% (120) had Other RSS feed</li> </ul>	<ul style="list-style-type: none"> <li>• 52% (108) had Other RSS feed</li> </ul>	<ul style="list-style-type: none"> <li>• 26% (11) had Other RSS feed</li> </ul>
RSS feeds (all types total – TOC and/or Other)	<ul style="list-style-type: none"> <li>• 87% (215) had RSS feed(s)</li> </ul>	<ul style="list-style-type: none"> <li>• 91% (187) had RSS feed(s)</li> </ul>	<ul style="list-style-type: none"> <li>• 67% (28) had RSS feed(s)</li> </ul>

### Social bookmarking tools

Sixty-one percent of all journals had social bookmarking tools on the journals' Web sites to allow readers to share the journals' content with others on social bookmarking Web sites (*e.g.*, CiteULike, Connotea, Delicious, Facebook, Blogger, Twitter, StumbleUpon, Reddit) (see [Table 4](#)). Sixty-three percent of traditional journals and 52 percent of open access journals used social bookmarking tools (see [Table 4](#)). One publisher limited sharing of the journal's content through only CiteULike, Connotea, and Delicious. Another publisher required logging in to share a journal article through social bookmarking tools. In this particular case, access to the journal for this study's author was through an institutional license. To create an account for this journal, readers would need to work with the institution to get a code. This is an unfortunate obstacle for readers and will likely detract from the use of social bookmarking for this publisher. Journals that had social bookmarking tools to share journal content did not necessarily have RSS feeds or Twitter or Facebook accounts for the journal.

**Table 4:** Sharing ability for a sample of health sciences journals.  
Note: Sharing ability refers to the ability for researchers or readers to

share journal content from a journal using social bookmarking tools ( <i>e.g.</i> , Citeulike, Connoteo, Delicious, Facebook, Blogger, Twitter, Reddit, StumbleUpon).			
Findings for social bookmarking tools	All journals ( <i>N</i> =248)	Traditional journals ( <i>N</i> =206)	Open access journals ( <i>N</i> =42)
Reader can share journal article on reader's own social bookmarking page at article level	<ul style="list-style-type: none"> <li>61% (152) had social bookmarking tools for the reader/researcher to share content (1 not possible to determine without account)</li> </ul>	<ul style="list-style-type: none"> <li>63% (130) had social bookmarking tools for the reader/researcher to share content (of 130, 8 required login to share a specific article, 1 could only use Facebook "like", 1 could only use Connoteo)</li> </ul>	<ul style="list-style-type: none"> <li>52% (22) had social bookmarking tools for the reader/researcher to share content</li> </ul>

#### Publishers' platforms

The provision of features such as RSS feeds and being able to use social bookmarking tools was dependent on the publisher. For example, if a publisher provided a feature such as an RSS feed, it was typically seen in all journals examined from the same publisher. Available Web 2.0 features are dependent on the platform of the journal and this study only examined the primary location of the journal. A cursory look at one publisher with multiple platforms indicated features available on one platform were not necessarily available on another. In addition, if a journal were to be accessed through an aggregator, then Web 2.0 features such as RSS feeds and social bookmarking features will depend on whether the aggregator provides it.



#### Discussion

Not all health sciences journals have completely embraced Web 2.0 technology, which could be used to promote and share journal content. Most journals offer RSS feeds for readers to keep current on content, followed by more than half of journals allowing the readers to share journal content with other readers using Web 2.0 social networking tools. Only about a quarter of journals had embraced using Twitter or Facebook to promote journal content. Because some journals were posting on Facebook and Twitter information about journals at a more general level (*i.e.*, posted that a new issue was published rather than specifics about the individual articles published), not all Facebook or Twitter journal feeds could be used to keep up-to-date on new journal articles.

While health sciences researchers can likely use RSS feeds to keep up-to-date on the content of most journals they are interested in, just over half of the journals make it easy for journal readers and authors to share and promote journal content through social bookmarking. Given that many practicing clinicians do not have time to read multiple journals, and the fact that many followers on social bookmarking tools follow individuals with similar interests, for readers who tend to utilize tweets or social bookmarking tools for recommended readings outside of their typical repertoire, journals that do not offer a way for their readers to directly share and recommend journal content with similar researchers may lose potential readers.

Traditional health sciences journals were more likely than open access journals to incorporate or use Web 2.0 technology. Traditional journals were more likely to allow readers to follow new journal content through Twitter, Facebook, or RSS feeds. However, traditional journals were only slightly more likely than open access journals to allow readers to share journal content with others through Facebook, Twitter, Citeulike, Delicious, Blogger, Digg, etc. As one study seemed to suggest, readers are more likely to share information using Web 2.0 technology directly to the article if the article was freely accessible as in OA journals (Priem and Costello, 2010). That suggests that OA journals could potentially benefit more than traditional journals from increased distribution of their content through the use of these tools, be it the journal itself sharing the content (Twitter, Facebook, or RSS Feeds) or readers sharing the content through social bookmarking (*e.g.*, CiteuLike, Connotea, Delicious, Facebook, Blogger, Twitter, Reddit, StumbleUpon). However, OA journals are most unlikely to do this currently. Considering open access journals are seen as part of the changing landscape in scholarly communication, it is surprising that more OA journals are not embracing the potential advantages of Web 2.0 technology.

Overall, it seems there is an advantage for both OA and traditional journals to embrace the

prospects offered by Web 2.0 to disseminate and promote micro-information about the journals' articles, especially when that leads to the articles themselves ultimately being accessed. Social bookmarking tools also offer a simple and convenient ways for authors to promote their research following publication. Since once of the aims a researcher would be to disseminate their published research, it seems all publishers would be interested in embracing Web 2.0 technology to help their authors promote their scholarship.

As noted previously, one study found a correlation between the number of tweets and the number of article downloads (Puustinen and Edwards, 2012). Another study found the number of tweets could predict the later impact the journal would have in terms of the number of cited references (Eysenbach, 2011). Such findings are part of the emerging field of altmetrics, where the quantity of social booking could assess the quality and value of scholarship in a way comparable to citation counts for articles. If it is the case that more publishers and authors are interested in these new metrics, then the technology needs to be present within the journal to share content through Web 2.0 technology. In order for this to have an impact, scholars will need to see significance in altmetrics that can be produced through the use of Web 2.0 technology.

As interest in altmetrics grows, authors will also need a way to track and measure their altmetrics. Some publishers, such as PLoS, have begun to track impact metrics beyond just citation counts and have developed software that will track the number of times an article is shared using social networking tools such as CiteULike, Connotea, Facebook and Mendeley (PLoS, 2012). Two tools, CitedIn (<http://citedin.org>) and total-impact (<http://total-impact.org>), are also available for scholars to enter information about the articles, such as the PubMed PMID in the case of CitedIn, or the PMID or DOI in the case of total-impact. After an author enters in article information, these tools generate an impact report. total-impact, which is currently in beta, may provide the number of times an article has been liked on Facebook, tweeted, cited in publications, viewed at the publisher Web site, or shared on social bookmarking tools such as Delicious, Mendeley, or CiteULike. While total-impact likely requires the cooperation of the publisher for information such as downloads and cited references, further development of the tool will likely be of interest to many authors and publishers.



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## Conclusion

The use of social networking/bookmarking tools continues to grow, and the ability to use these tools within health sciences journals is important. Web 2.0 technologies can link potential readers to articles without the reader having to search for articles. This is particularly important for busy health care professionals who do not have time to browse multiple articles to keep current in their field. The reader's selection of feeds from various sources of content will drive what they ultimately read. Social bookmarking tools also provide a simple way for authors and publishers to disseminate and promote their publications.

These social media tools also have great potential for open access journals. Not only can the tools be used to promote and share the journal content, but for open access journals, anyone following the shared social media content will be linked to the full text of an article. While a traditional journal may allow a Twitter user to share the micro-information about an article with anyone through a social bookmarking feed, or allow someone to subscribe to the RSS feeds of the journal, only a subscriber will be able to read the full content of an article.

In order for social bookmarking tools to have their full impact on scholarly journals, all journals need to offer the technology, and authors and readers need to use the technology. In addition, scholars and the academy also need to consider how the scholarly value of an article is demonstrated through its number of tweets, likes, and shares. 

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## Note

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