

## The Growth of Open Access Journals in Medical Science: Achievements and Ongoing Challenges

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### ABSTRACT

Internet has generated the development of scholarly publications and every subject field is observing an incessant progress in the scholarly arcade. Open access, the invention of Internet has also bagged the universal support. Medical Science, is among the subjects which are perceiving an intense progress in the open access field. The study explores the prominence of open access titles in the field of Medical Science. Numerous features highlighting open access journals in the field of Medical Science are featured in the study.

The study will be supportive for the researchers in discovering the open access journals in the field of Medical Science for wider dissemination of its scholarly information and increase participation of wider user communities. Furthermore, it can also act as a revelation to the scholarly world to identify the real position of open access titles in the field of Medical Science.

The results noticeably reveal an illustrative progression of open access titles in the field of Medical Science. Commercial publishers have also united as open access market performers. As a developing subject field Medical Science has a long way to go, but the beginning is promising and it is hoped by studies such as this the user perspective may be a contributing factor to the establishment of open access publishing. There is also much demand on help from information professionals via open access.

**KEYWORDS:** Open Access, Open Access Journals, Open Access-Growth-Development, Medical Science, DOAJ-Medical Science, Medical Science-Growth-Development, Open Access Medical Science.

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### INTRODUCTION

Scientific publishing is undergoing significant changes due to the growth of online publications and increases in the number of open access journals (Voronin, Myrzahmetov & Bernstein, 2011). Different authorities on open access have highlighted this budding concept in different ways. One of the lucid definitions on open access has been provided by Budapest open access initiative which states that open access is the free availability of articles on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself (Budapest Open Access Initiative, 2002). However, Association of Research Libraries (ARL, 2007) define open access as any dissemination model created with no expectation of direct monetary return and which makes works available online at no cost to the readers. An important and well renowned authority, Suber (2003) on open access, defines open access as free online availability of scholarly literature. Lynch (2006) also comments on open access as an increased elimination of barriers to the use of the scholarly literature by anyone interested in making such use. McCulloch (2006) visualizes that open access movement attempts to reassert control over publicly funded research in order to achieve “*the best value*” and make such research output transparent and freely accessible. Nicholas, Huntington and Rowlands (2005) elaborate on the value of such activity by stressing that it is possible to “read, download, copy, distribute and print articles and other materials freely”. The free availability of research is tempting the researchers to embrace the open access revolution with warm welcome. Number of advantages ranging from wider visibility to high citation have made open access so popular among the researchers that the heat of open access publishing is accelerating day by day. Highly ranked journals like *Nature*, *Wall Street Journal* and *The Scientist* all ranked open access among their top stories in 2003 (Willinsky, 2006). Initially a strong resentment was seen from the publishing industry, that open scholarship was a great threat to their business venture. But with the passage of time, leading publishers also joined the open access bandwagon because of innumerable potentialities that are adhered to it. Leading publishers like *Elsevier*, *Oxford*, *Taylor and Francis*, *Sage*, *Springer* and many more made some of their content freely available to the readers. Projects like *HINARI*, *AGORA*, and *OARE* etc that made the scholarly content freely available to developing economies also helped to propagate the cause of open access, i.e. *information for all*. Scholarly and scientific journals are now enjoying flavours of open access and are growing at an escalating rate day by day. Open access journals have in this relatively shorter span of time won the hearts of the elements associated with the rim of open access. With leading publishers and reputed universities their count is growing at a very fast rate. The serial crisis that was the outcome of spurting economy has also been solved by open access platform.

However, open access is gaining popularity day by day and every subject has been positively affected by it. Social Sciences, which deal with the various facets of society in relation to man, are also embracing this concept with

open arms. Scholars in the various fields of Social Sciences, including Library and Information Science are contributing to open access journal revolution because of innumerable benefits adhered to it.

### PROBLEM

Millions of scholarly articles are appearing on the Web but due to number of restrictions, access to them can't be availed every time. Out of them, a large number of articles are useful for Medical Science research and development that appear in different journals from time to time. Open access journals that provide free access to the research have made their debut to provide ease in access to the research. Day by day, these journals increase at a very fast rate on the Web. The study will encompass the development of open access journals in the field of Medical Science.

### OBJECTIVES

The main objective was to study how open access journals in the field of Medical Science are experimenting with features like *publishing origin, publishing models, language usage, visibility, article processing concerns*.

### SCOPE

The study was undertaken to visualize the position of Medical Science field in this epoch of open access which has revolutionized the entire world in a short duration of time. This study is providing measurement of the quantitative development of OA publications in the field of Medical Science. It is because of both financial and time constraints the study was conducted and restricted to the open access journals indexed by DOAJ database upto Dec. 2016.

### REVIEW OF LITERATURE

A number of studies have been carried that highlight various facets of open access. Falk (2014) studied that 1200 open access journals were available on the Web as compared to a total of only five in 1992. Deals between publishers can be one of the catalytic forces in the increase of open access journals. Development of open access journal publishing has also been researched by Laakso, Welling, Bukvova, Nyman, Björk & Hedlund, (2011). A steady rate of increase of the open access journals has also been witnessed by number of authorities. Many carry on studies were also conducted to trace the growth and development of open access journals (Wells, 2009; Gul, Wani & Majeed, 2008). The concept of open access (OA) that opened new dimensions in the information communication cycle has been widely accepted all over the world. Open access, which provides free access to the information content, is widely expanding its domain because of enormous benefits accrued from it. It is a blessing for everyone involved with the information communication process. Their growth and development has been one of the success stories over World Wide Web. With only five journals offering open access mode to their contents in 1992 and 1200 in 2004 (Falk, 2004), the number has reached to more than 7000 as on December 01, 2010 (Directory of Open Access Journals, 2010). A study by McVeigh (2004) documents that the number of open access journals in the citation indexes provided by ISI Thomson™ is growing, both in terms of creating new titles and conversion of established titles. Open access journal publishing in different fields is also studied by Borgman (2014). The open access platform provided by publishers has also been studied by Dallmeier-Tiessen, et al, (2010). Recent studies have explored a dramatic growth of open access journals (Happy, 2012)

### METHODOLOGY

In order to ascertain the no. of OA journals published in the field of Medical Science (MS), an authentic databases were consulted, i.e., Lund University's *Directory of Open Access Journals* (DOAJ). As on Dec 20, 2016, DOAJ indexed 1132 titles in the field of MS. Each title was further manually checked on their respective websites and no. discrepancies were found.

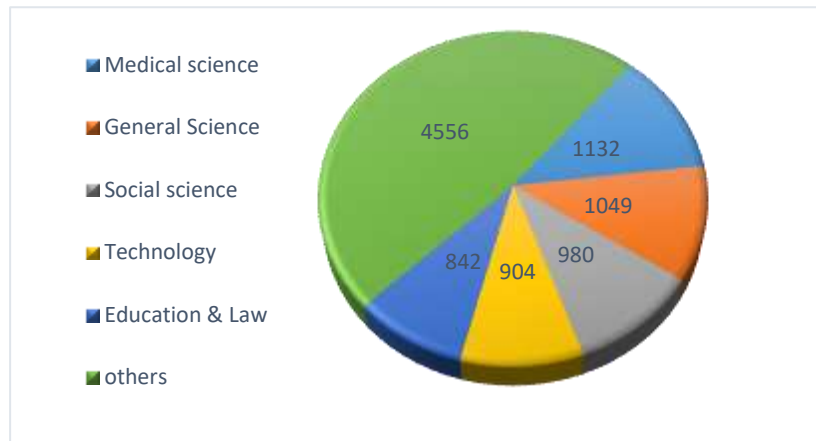
### RESULTS & DISCUSSION

**Table I**, shows 9463 is the total no of open access journals comprising 2409416 research articles covering 20 main subjects and submitted by 128 countries throughout the world indexed by Directory of Open Access Journals (DOAJ).

**Table I: Directory of Open Access Journals (DOAJ)**

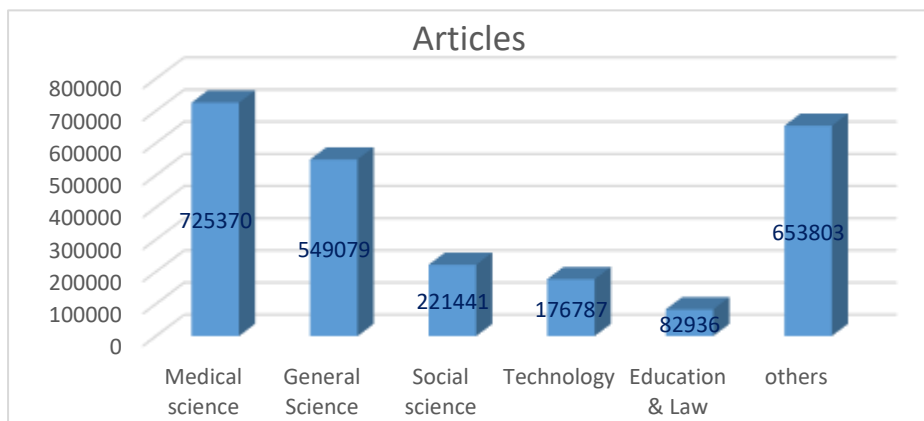
Total no of Journals	9,463
Total no of Articles	2,409,416
Subjects covered	20
Countries included	128

Fig 1.1 shows the subject wise percentage of journals in DOAJ. In this figure it is shown that medical science is leading in at the top by publishing about 12% of journals of the DOAJ followed by General Science by 11% then by Social Science by 10% and so on.



**Fig 1.1: Total number of Journals in subjects classified**

Fig: 2.1 shows the highest no of articles are published in Medical Science about 30% followed by General Science 27 % then by social science 9% then by technology 7% then by Education & Law 4% and only 653803 articles i.e. only 23% are published in other subjects.



**Fig 2.1: Total number of Articles in classified subjects of DOAJ**

**Table II**, reveals that the *Directory of Open Access Journals* data base is currently indexing 1132 open access scholarly journals in the field of Medical Science which are comprising 725370 research articles and covering the scope of 105 sub subjects in the field of Medical science publishing from 71 countries throughout the world.

**Table II: Open Access Journals in Medical Science in DOAJ**

Total no of Journals	1132
Total no of Articles	725370
Sub Subjects covered	105

Countries publishing	71
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**Table: III**, reveals the number of journals published in different countries. 1132 OA MS journals are published from 71 countries. Among these, a maximum of 196 titles are published in United Kingdom (17.31%), followed respectively by 145 in India (12.80%) and 90 in United States (7.95%). On the other extreme, ten countries publish two journals each while 16 countries including Israel publish single journal each.

**Table III: Country of publication**

Country	No. of Journals
United Kingdom	198
India	145
United States	90
Iran, Islamic Republic	70
Egypt	65
Other Countries	675

**Publishers of Journals:**

162 publishers take active part in the publication of OA MS journals. Bio-Med Central publishes a maximum of 124 titles followed by Med-Know Publication which publishes 70 titles followed by *Hindawi Publishing Corporation* by 68 titles then followed by *Bentham open* 32 titles then followed by *Dove Medical Press* 24 titles while 13 titles are published each by *Termedia Publishing House* and *Elsevier* however 11 titles are published each by *Tehran University of Medical Sciences*, *SAGEPress Publications*, *Galenos Yayinevi*, and *Elmer Press* rest of 744 titles are published by other 151 publishers

**In Table IV** Lingual Assessment of open Access Journals of Medical Science is presented and it is shown that MS journals are represented in 28 different languages. English is the content language preferred by majority of journals (873, 77.12%), followed respectively 60 in Portuguese (5.30%) and 57 in Spanish (5.03%). On the other hand, 2 journals are published each in *Serbian*, *Romanian*, and *Chinese* languages. One journal each is published in *Czech*, *Greek-modern*, *Hindi*, *Hungarian*, *Macedonian*, *Malay*, *Slovak*, *Slovene*, and *Ukrainian*.

**Table 2: Lingual Assessment of OA MS journals**

Rank	Language	No. of Journals	%age
1	English	873	77.12
2	Portuguese	60	5.30
3	Spanish	57	5.03
4	Persian	21	1.85
5	German	20	1.77
6	Polish	15	1.32
7	French	14	1.24
8	Indonesian	13	1.15

**Article Processing Charges / Handling Fee**

By Open Access it is known that the journal is freely available to the user on the public web, but the publisher may cost its authors to pay in the form of *article processing charges* or *handling charges*. Since managing a journal is a costly affair and the studies have shown that the process of peer review costs on an average 400USD per article (Rowland, 2002). Of about 1132 journals in Medical Science, only 130 journals charge their authors to

pay article processing charges or handling fee. Authors have to pay 2000 EUO to get their article published in *Current Directions in Biomedical Engineering* (ISSN: 2364-5504), 1780USD to published in *Research and Reports in Endocrine Disorders* (ISSN: 2230-2271) and 1565GBP for *Research Involvement and Engagement* (ISSN: 2056-7529). While as 228 journals do not charge any article processing fees or handling charges to their authors. However, no information could be traced related to 771 journals regarding their fee charging structure, some of the renowned journals like, *Annals of Intensive Care* (ISSN: 2110-5820), *International Journal of Integrative Psychotherapy* (ISSN: 2156-9703) and *Journal of Medical Physics* (ISSN: 0971-6203) could not be traced out with respect of their fee charging structure.

Accessibility

Directory of Open Access Journals (DOAJ) is not only indexing OA journals but also archiving resource of about 45 per cent of indexed titles. In case of OA MS journals, 33 per cent of them i.e. 47 titles are searchable to article level in DOAJ. For rest of titles, one has to access them individually at their respective websites.

## CONCLUSION

The progress of open access journals in the field of Medical Science is evident from the study. Under developed Countries have to come on open access canvas. Not only universities should be the innovators in emphasizing the research in MS but research institutes and centers, societies and other foundations associated with research should actively take part in the research output. Though commercial publishers have joined hands in open access market, yet there need to be lots of efforts on their side to remove the economic barrier that has always hindered the researchers from quality research in the MS field. The journals offering hybrid or fee based mode should try to slash down the author processing charges so that the article publication can become an affordable job. Use of Open Journal Systems (OJS) can be one of the best solutions in the times of economic crisis and especially for those nations which are endemically short of adequate financial resources to cope up with the changing technologies. Content availability in more languages with English as one of the languages can help to remove the language barrier in information communication process in information community. Indexing the journals in more sources can help to increase the content visibility of OA journals in the field of OA. Application of Web 2.0 tools for the content promotion and inclusion in different subjective forums and boards can also help in the sustenance of the journals in the present dynamic and ever changing digital environment.

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