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Open Access E-Books in the Field of Health Sciences: A Scientometric Study

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Abstract

The Directory of Open Access Books (DOAB) is a discovery service for open access e-books. It provides a searchable index to peer-reviewed e-books published under an open access business model. The present study aims to assess the scientometric trends of the open access e-books in the field of the Health Sciences available through the Directory of Open Access Books. In order to fulfil the set objectives, the relevant details of the Health Sciences e-books were collected. The results reveal that 916 e-books are available in the field of the Health Sciences through the Directory of Open Access. The highest number of e-books is contributed in General Medicine (40.61%, 372) and in the English language (83.84%, 768). These e-books also contain current information as the majority (88.32%, 809) of these are published from 2011 onwards by the reputed publishers like Frontiers Media, SciELO, Springer, Palgrave Macmillan, and Oxford University Press etc. The Directory of Open Access Books was selected as a source for data collection whereas the Health Sciences was selected as the field of study. Therefore, the finding can't be generalised across directories and subjects.

Keywords: Open Access, E-books, Electronic Books, Directory of Open Access Books, Health Sciences.

Introduction

The Internet, a revolutionary invention of 1969 started evolving as a network for researchers in 1983 and got boosted with the miraculous invention of the World Wide Web by Tim Berners Lee in 1989. The emergence of the WWW resulted in the increased number of scholarly resources in electronic form such as e-books, e-journals, e-databases, e-theses and dissertations and the like on the public Internet thereby stimulating the research productivity. It has become one of the main communicational tools among researchers for sharing the full texts of open access information sources electronically irrespective of geographical or distance barriers. Open Access means free and unrestricted availability of literature on the Internet. The Budapest Open Access Initiative (2002) defined open access as "free availability of research articles on 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 (Suber, 2013). Thus, the goal of open access is to grant anyone, anywhere and anytime free

access to the results of scientific research (Mele, 2009). The basic aim of OA is to make the intellectual output of researchers and their institutions more visible, accessible, harvestable, searchable and usable by any user (Loan & Shiekh, 2016).

The concept of open access e-books started in 1971 when Michael Hart started Project Guttenberg (Connaway & Wicht, 2007) to digitise all the print books printed since the invention of the printing press with the aim to store, retrieve and search information the electronic or digital version of these books at any time from any part of the globe. Reitz (2007) defined an electronic book as a "digital version of a traditional print book designed to be read on a personal computer or an e-book reader". An open access e-book is a book in the electronic or digital form that is available on the public internet free of charge, which can be read on a computer, laptop, or e-book reader (Loan, 2011). The full-text of these e-books is always freely available (24x7) to worldwide readers and thus can accelerate the speed of research.

Directory of Open Access Books (DOAB)

The Directory of Open Access Books (DOAB) was unofficially operating since 2011 and its beta version was launched in 2012. Officially, the DOAB was launched on July 1, 2013, at the Open Access Monographs in the Humanities and Social Sciences Conference at the British Library in London by the Open Access Publishing in European Networks (OAPEN) Foundation (Ferwerda, Snijder, & Adema, 2013). The OAPEN Foundation is an international initiative dedicated to open access monograph publishing, based at the National Library, The Hague (Snijder, 2012). The DOAB is being developed in close cooperation with Lars Bjørnshauge and Salam Baker Shanawa (Director of SemperTool), who were also responsible for the development of the Directory of Open Access Journals (Adema, 2012). The DOAB is a discovery service for open access e-books. The DOAB provides a searchable index to peer-reviewed monographs and edited volumes published under an open access business model and the full-text of these e-books is available on the OAPEN Library or publisher's website or repositories. It aims to maximize dissemination, visibility, and impact of open access e-books. In order to achieve its objective, the DOAB supports open archives initiative protocol for metadata harvesting (OAI-PMH). Besides, the DOAB only lists books that are licensed under the Creative Commons (CC) or comparable licenses. These open access e-books are available under the banner of "free to read and free to share". Readers not only have rights to read, print, download and save only but also the right to share for non-commercial purposes (Loan & Nisa 2015). Further, the publishers provide and maintain metadata records of these e-books; libraries can integrate the records into their online catalogues and even aggregators can integrate the records into their commercial services for the maximum utilization of these e-books (Stenson, 2012).

The DOAB has also a multilingual search and browse facility on its website with basic and advanced search features. In the advanced search, a user can search through various fields like the title, ISBN, author, keywords, abstract and publisher. The DOAB search page also supports the Boolean Operators to refine the search results. Users can also narrow the search results by restricting the search to a particular publisher, license, language and period. Information seekers have the browsing facility on its homepage as well and can browse the e-books through title, subject and publisher approaches. In addition, DOAB provides abstracting service to its e-books collection. Abstracts of e-books are readily available online for readers in order to judge their relevance. Readers can easily download required e-books

from the qualitative collection of these open access e-books available through DOAB (Loan & Nisa, 2015).

Literature Review

There is a vast amount of literature available on open access; however, only limited number of studies have been conducted on open access e-books and very few on open access e-books in the Directory of Open Access Books, Loan & Nisa (2015). conducted the first study on the Directory of Open Access Books in 2015. The study aims to assess the current trends of the open access e-books in the field of science and technology disciplines available through the Directory of Open Access Books. The findings of the study reveal that the collection of the e-books in the Directory of Open Access Books is growing constantly. The Directory of Open Access Books was started in 2011 with 490 e-books and 15 publishers and reached to 2730 academic peer-reviewed e-books published by 94 publishers in February 2015. The results further reveal that 307 e-books are available on science and technology disciplines through the Directory of Open Access Books dealing with eight major subject areas and 36 sub-fields. The maximum number of e-books is available on General Science (95), Technology & Engineering (54), Earth & Environmental Sciences (50) & Health & Medical Sciences (47). In sub-fields, most of the e-books cover Computer Sciences (24), Information Theory (24), General Medicine (20), Mathematics (17), Biology (13) & Geography (11). The linguistic assessment shows that 57.98 percent (178) of these e-books have been published in English followed in German (88, 28.66%) and Italian (18, 5.86%) respectively. The publishing trends reveal that 59.93 percent (184) e-books have contributed by university presses whereas 40.07 percent (123) by other publishing houses around the world. Mary (2015) conducted a study to identify the open access books available in the DOAB on education. The findings depict that 106 e-books are available in DOAB on education in which the maximum number is published from 2009. The study also reveals that these e-books are published in 7 different languages in which the maximum (38) e-books are published in the Portuguese language followed by (37) in English, (14) in German language 14 respectively. Dhanavandan & Tamizhchelvan (2016) conducted an analytical study of the DOAB. The results reveal that 3379 e-books were available in which the maximum number of books (1584, 46.88%) were published in the English language by the ANU Press (368, 10.89%) and after 2011 (1621, 47.97%). Khanchandani & Kumar (2017) conducted a study on e-books in Science and Technology available in the Directory of Open Access Books (DOAB). The results show that there are 1052 e-books indexed in the DOAB in Science and Technology disciplines in which fewer books are available in pure sciences and more in applied sciences. The maximum books (473) cover Health Sciences published and published after 2007. About 800 (76.04%) e-books are published in English followed by 118 e-books (11.21%) in Portuguese, German 95 (9.03%), and Italian 17 (1.61%) respectively. The limited number of studies conducted on the DOAB reveals that the collection of e-books is constantly growing since its creation.

Research Problem

The health science is the most important field of knowledge as it studies the human health. It enhanced the life expectancy of human beings with the application of the medical knowledge. The open access to the health information is very crucial for the public life in the world. The open access to the health information can save many lives and its inaccessibility

can be fatal for the world. Grouse (2014) has rightly summarized the importance of the health & medical information as:

"Medical research yields important and valuable information that benefits the people of the world. Communications that facilitate the widest global dissemination of such information are valuable for public health, while those communications methods that restrict the availability of such information limit this benefit. Open access is particularly valuable for developing countries where limited financial resources have historically deprived healthcare professionals of the latest medical information. The ability of the people of the world to prevent disease and improve their health would be benefited by improved access to reliable medical information".

Research Design

Objectives

The present study is conducted to identify the open access e-books in the field of the health & medical sciences available through the Directory of Open Access Books (DOAB) and find out answers to these questions:

What is the position of the open access e-books in the field of the health sciences?

What is the growth rate of these e-books in the Directory of Open Access Books?

What are the publishing, linguistic, authorship, and other bibliometric trends of these e-books?

Methodology

This study analysed the number of e-books pertaining to the health sciences available through the Directory of Open Access Books (DOAB). The DOAB has classified the books in various subject categories and the health science e-books were accessed to collect their bibliographic data like linguistic, subject, authorship, editorship, and publication details and recorded in the excel file. Later, the data were analysed using simple quantitative techniques and presented in tabular forms to reveal findings.

Limitations

The Directory of Open Access Books was selected as a source for data collection whereas the Health Sciences was selected as the field of study. Therefore, the finding can't be generalised across directories and subjects.

Findings

Subject Coverage

Till date, the DOAB lists 8561 books covering around 17 Subject areas. The maximum number of e-books are available in the field of Social Sciences (1785, 20.85%) followed by History and Archaeology (1264, 14.80%) and Health Sciences (10.70%, 916) respectively. Other Subject categories include Law and Political Science (9.8%, 836), Languages and Literature (8.33%, 713) and General Science (7.74%. 663). The results reveal that the open access books are published in almost all subject areas but the Social Science discipline is ahead of all other subject areas. The subject categories like Agriculture and Food Sciences; Chemistry; General Works; Mathematics and Statistics; and Physics and Astronomy have a very little contribution to the DOAB (Table 1). More efforts are needed to be done by the authors as well as the publishers in these subject fields to maximize their contribution towards open access publishing.

Table 1
Subject Coverage of E-Books

S. No.	Subject	No. of e-books	% of e-books
01	Agriculture and Food Sciences	78	0.91
02	Arts and Architecture	483	5.64
03	Biology and Life Sciences	305	3.56
04	Business and Economics	341	3.98
05	Chemistry	34	0.39
06	Earth and Environmental Sciences	289	3.38
07	General works	14	0.16
08	Health Sciences	916	10.7
09	History and Archaeology	1264	14.8
10	Languages and Literature	713	8.33
11	Law and Political Science	836	9.8
12	Mathematics and Statistics	81	0.94
13	Philosophy and Religion	383	4.47
14	Physics and Astronomy	41	0.47
15	Science General	663	7.74
16	Social Sciences	1785	20.85
17	Technology and Engineering	335	3.91
	Total	**8561**	**100**

Health Sciences

The Health Sciences e-books have been broadly classified into the four (4) categories: Dentistry, Medicine (General), Nursing and Public Health. The maximum number of e-books (881, 96.18%) is available on the Medicine (General) followed by Public health (32, 3.5%). Dentistry and Nursing are contributing negligibly (0.22% and 0.1%) respectively (Table 2).

Table 2
E-Books in the field of Health Sciences

S. No.	Category	No. of E-Books	% of E-Books
01	Dentistry	2	0.22
02	Medicine (General)	881	96.18
03	Nursing	1	0.1
04	Public Health	32	3.5
Total	Total	916	100

The Medicine (General) has been further classified into the 19 categories. The maximum number of e-books is contributed on Medicine (40.61%, 372) followed by Neurology (26.90%, 246) whereas on Anaesthesiology, Gastroenterology, Pathology, and Urology no e-books are available at all (Table 3).

Table 3
Sub-Categories of Medicine (General)

S. No.	Category	No. of E-Books	% of E-Books
01	Medicine	372	42.2
01	Allergy and Immunology	63	7.15
02	Anaesthesiology	0	0
03	Cardiovascular	2	0.23
04	Dermatology	3	0.34
05	Gastroenterology	0	0
06	Gynaecology and Obstetrics	1	0.11
07	Internal Medicine	59	6.7
08	Neurology	246	28
09	Oncology	25	2.84
10	Ophthalmology	0	0
11	Otorhinolaryngology	0	0
12	Pathology	0	0
13	Paediatrics	6	0.7
14	Pharmacy and Materia Medica	38	4.3
15	Psychiatry	26	2.9
16	Sports Medicine	2	0.23
17	Surgery	4	0.45
18	Therapeutics	34	3.85
19	Urology	0	0
	Total	881	100

Authorship/Editorship Patterns

In Health Sciences, more e-books have been contributed by Editors (653, 71.20%) as compared to authors (28.8%, 263).

Table 4
Authorship Pattern of E-Books

Authorship Pattern	No. of E-Books	% of E-Books
Single Author	139	15.2
Two Authors	63	6.9
Three Authors	38	4.1
Four Authors	17	1.9
More Than Four Authors	6	0.7
Total	263	28.8

The authorship trends show that the maximum number has been contributed by the single author (139, 15.2%) followed by the two (63, 6.9%), three (38, 4.1%) and four (17, 1.90 %) authors respectively. A very less percentage of e-books (6, 0.7%) have been contributed by more than four authors as well (Table 4). Among the edited e-books, the maximum number is contributed by the two editors (277, 30.2%) followed by the three editors (166, 18.10 %). (Table 5).

Table 5
Editorship Pattern of E-Books

Editorship Pattern	No. of e-books	% of e-books
Single Editor	93	10.2
Two Editors	277	30.2
Three Editors	166	18.1
Four Editors	80	8.7
More Than Four Editors	37	4
Total	653	71.2

Publishing Bodies

While analysing the publisher's contribution, it has been revealed that more than 25 reputed publishers all over the world have contributed to the Health Sciences e-books in the Directory of Open Access Books. The maximum number of e-books has been published by the Frontiers Media SA (61.70%, 565) followed by SciELO Books (10.80%, 99), Springer (8.73%, 80), and Australian National University Press (5.80%, 53) respectively. Other Publishers include Universtatsverlag Gottingen, De Gruyter, University Adelaide Press (0.98%, 9) and few others (Table 6). Many of the publishers have contributed in single digits.

Table 6
Publishing Bodies of E-Books

S. No.	Publisher	No. of E-Books	% of E-Books
01	Frontiers Media S.A	565	61.7
02	SciELO Books	99	10.8
03	Springer	80	8.73
04	Australian National University Press (ANU)	53	5.8
05	Universtatsverlag Gottingen	25	2.72
06	De Gruyter	15	1.63
07	University of Adelaide Press	9	0.98
08	Multidisciplinary Digital Publishing Institute	6	0.65
09	Bohlau	6	0.65
10	Palgrave Macmillan	5	0.55
11	Oxford University Press	5	0.55
12	Others	48	5.24
	Total	916	100

Publication Growth

The 5-yearly analysis of e-books in health sciences reveals that majority of the books have been published during the years 2011 to 2015 (63.32%, 580). This has been followed by the years 2016-March 2017 (25%, 229) and 2006-2010 (5.02%, 46) respectively. A little percentage of books has been included from the years before (3.60%, 33) and after (3.06%, 28) 2000 as well (Table 7). The results depict that the open access publishing of e-books is showing a positive trend with each passing year.

Table 7
Publication Date Wise Inclusion of E-Books

S. No.	Year	No. of E-books	% of E-books
1	≥2000	33	3.6
2	2001-2005	28	3.06
3	2006-2010	46	5.02
4	2011-2015	580	63.32
5	2016-2017(March)	229	25
	Total	916	100

Linguistic Assessment

The e-books in Health Sciences are available in 7 different Languages. The highest number of e-books is available in the English language (83.84%, 768) followed in the Portuguese (10.70%, 98), German (2.62%, 24) and Deutsch (1.86%, 17) languages. Other languages like the Italian, French, and Finnish also contribute a small percentage of e-books (0.98%, 9) (Table 8). The findings are in tune with similar studies conducted by Dhanavandan & Tamizhchelvan (2016) which reveal that the English language has been predominantly used while contributing to DOAB. Further, there is a need for the inclusion of e-books in other languages as well.

Table 8
Language Wise Inclusion of E-Books

S. No.	Language	No. of E-Books	% of E-Books
01	English	768	83.84
02	Portuguese	98	10.7
03	German	24	2.62
04	Deutsche	17	1.86
05	Others	9	0.98
	Total	916	100

Discussion and Conclusion

The collection of the Directory of Open Access Books shows a positive growth in all fields of knowledge. The highest number of e-books in the Directory of Open Access Books is available in the field of the Social Sciences followed by History and Archaeology and Health Sciences respectively. The Directory of Open Access Books was officially launched at the Open Access Monographs in the Humanities and Social Science Conference to facilitate and/or promote Open Access Monographs in the Humanities and Social Sciences. It is the possible reason that it contains mostly e-books on social science disciplines. However, this figure needs to be further strengthened so that the information related to the social sciences disciplines is disseminated widely in a timely fashion. In Health Sciences, the greater number of e-books are contributed on General Medicine (40.61 %, 372) followed by Neurology (26.90%, 246). However, there are few e-books on other sub-fields of the Health Sciences as well whose percentage is very less but few categories like Anaesthesiology, Gastroenterology, Pathology, and Urology don't have any coverage at all. The need is to include many new e-books in the Directory of Open Access Books on all subject areas to cover the gaps. Loan & Sheikh (2016) reveal that 31.9 percent of the health repositories archive books in their

collection. These e-books need to be indexed in the DOAB to enrich its collection. The 5-year analysis of e-books in health sciences reveals that majority of the books (63.32 %, 580) have been published from 2011 onwards. It shows that the growth rate of the e-books increases after every passing day and in the future the DOAB will become a good treasure of scholarly e-books covering all fields of knowledge including the Health Sciences.. Further, it is a very good sign that a good number of newly published e-books are included in the Directory of Open Access Books which is an indication that these e-books contain the nascent thought rather than the obsolete information. These e-books may be highly useful for the medical professionals to keep themselves abreast with the new developments in their respective fields. These e-books have largely contributed by the publishing houses of international repute like the Frontiers Media SciELO, Springer and the Oxford University Press and especially from developed countries. These publishing bodies with the help of subject experts thoroughly review the contents of the publication before its acceptance. Further, only the Directory of Open Access Books includes e-books which are peer-reviewed by the independent and external experts before publication. It guarantees that the subject content of the e-books is of high quality. Besides, the highest number of e-books in the Health Sciences has been published in the English language and thus can be used by the maximum number of users worldwide. Briefly, the Directory of Open Access Books targets to cover books on all subject areas in all languages from all countries and publishers. It is now the duty of the authors (like researchers and subject experts), publishers, institutions, and countries all over the world to enrich its collection by publishing the e-books in open access mode and deposit the same in the Directory of Open Access Books. These efforts can convert the DOAB into a treasure of knowledge that can be as valuable for than humans as life-saving medicine.

Future Research

The current research is the pioneering research on the open access e-books. In future, such research should also be conducted to identify their growth and development across the globe. Further, the present research is based on a quantitative analysis of open access e-books. The future researchers should focus on the qualitative aspects of these e-books such as citation analysis, h-indexes, use studies, up-to-datedness' and obsolescence etc.

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