Mapping of Stress Management Research: A Scientometric Analysis of Research Output during 2007-2013

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Abstract

The ultimate aim of the present study is to explore the research trends in the field of stress management from the Web of Science database amid the stipulated span i.e. 2007-2013. A total of 944 research articles were analysed in terms of categories such as year wise, subject wise and form wise distributions of stress management articles, most prolific author, core journals in the field of stress management, most productive countries producing stress management literature etc. It was found that the highest number of articles was produced in the year 2013 with 16.84% items on the subject "Stress Management and the journal entitled 'Psycho Oncology' published from New Jersey; USA is the most productive journal in the field of stress management, reporting 26 items i.e. 2.75% of the total literature. Furthermore, highest number 367 (38.87%) of research articles on stress management belong to the subject "Psychology". Moreover, USA is the leading country with 412 items i.e. 43.64% of the total literature.

Keywords

Stress Management; Web of Science; Scientometric

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The journal is available at www.jalis.in

INTRODUCTION

This is an age of research and expedition in every field of knowledge. The consequent increase in the production of information is best reflected in the literature of every discipline. Due to the rapid growth of knowledge, librarians and information scientists face greater problems in acquisition, collection, organization and dissemination of relevant documents within limited financial resources. To overcome these problems, they need techniques by which they can use the limited financial resources to the optimum. Amongst the large number of techniques available, scientometric is one of the most effective technique (Jasmine &Nithyanandam, 2011, Daud, 2016). Scientometric studies in recent years have attained significance because of its practical application in the evaluation of library operation and services. It has extensive application in library and information field in identifying the research trends in particular subject, authorship and collaboration research core journals, authors' productivity, obsolescence and scattering of literature. This study is helpful in management of scientific literature measuring the utility of periodicals and relationship between journals and subject area and also in knowing the most productive contribution in a given field. It is well known fact that the knowledge is growing at a very fast rate and it is necessary that a new work and findings should be highlighted among the research scholars and others who are interested in them. The present study will help the librarians in the selection of literature in the field of "Stress Management".

CONCEPT OF STRESS

In 1910, Sir William Osler explored the idea of stress and strain causing disease when he saw a relationship between angina pectoris and a hectic pace of life. The idea that environmental forces could actually cause disease rather than just short term ill effects and that people have a natural tendency to resist such forces, was seen in the work of Walter B. Canon in the 1930. Cannon studied the effects of stress on animal and people and, in particular studied the "fight or flight" reaction. Because of this reaction, people and animal will choose to stay and fight or attempt to escape when confronted by extreme danger. Cannon observed that when his subject experience situations of cold, lack of oxygen or excitement he could detect physiological changes such as emergency adrenaline secretion. He described these individuals as being "under stress" (Cartwright & Cooper, 1997).

EFFECTS OF STRESS

Stress affects human being in diverse ways. It can have wide ranging effects on emotion, mood, and behavior. Equally important but often less appreciated are effects on various systems, organs, and tissues all over the body. These effects on the physiology of the human being have a prolonged effect and can lead to severe problems hindering the day to day functioning(Patil, 2012; Chen, Liu, & Tseng, 2012).

AIMS AND OBJECTIVES OF THE STUDY

The present study aims at identification and description of some of the characteristics of literature published in the field of "Stress Management" over a period of seven years i.e. from 2007 to 2013 with a view to identify the source title, prolific authors, place, year, language, subject areas, forms of document, country of origin where the document is published, etc. The main objectives of present study are:

- ❖ **Ranking of periodicals**: To identify the core periodicals containing the maximumliterature on "Stress Management".
- ❖ **Ranking of authors**: To identify the eminent authors in the field of "StressManagement".
- ❖ **Forms of document**: To identify the most widely used form of source material i.e.periodical articles, research reports, conference proceedings, bulletins etc.
- ❖ **Geographical scattering of items**: To identify the country producing most of theliterature in the field of "Stress Management".
- ❖ **Chronological study**: To identify the most productive year/years of the literaturepublished on the subject.
- ❖ **Language wise distribution of items**: To identify the most dominating language inwhich most of the literature on the subject have been published.
- ❖ **Subject dispersion**: To identify the potential scattering of the subject under study.

METHODOLOGY

The methodology has been divided into following heads:

a. **Data source:** To undertake the present study on the literature of 'StressManagement', the Web of Science database was found to be the most comprehensive and appropriate source of literature in the field of medical science and social sciences and was selected for the present study. Web of Science is a citation database comprising more than 24 million citations for biomedical literature from MEDLINE, life science journals, and online books.

b. **Search strategies Adopted:** The term 'Stress Management' was used to search thearticles indexed in Web of Science. The 'topic' search of the database was used for retrieving the results. There were a total of 1466 documents indexed in Web of Science. However, all these documents are not related to "Stress Management". In order to analyze only the relevant articles, phrase searching was done and subject area was confined using refinement option given in the database. Articles which do not have the keywords of Stress Management in their respective title and abstract, were excluded and the articles closely related to "Stress Management" were included for the final analysis.

c. **Collection of Data:** All the filtered data was finally exported to MS-Excel where thetabulation, collection, addition, deletion, sorting, etc. was done. All articles referring to "Stress Management" research during 2007 to 2013 were assessed using the following aspects: publication outputs of authors, the output distribution in subject categories and journals, the publication outputs of countries and languages. The collected data were analyzed as per the objectives of this study.

DATA ANALYSIS, INTERPRETATION AND PRESENTATION

In order to find the relevant literature in the field of Stress Management during the period of 2007-2013, the present study used the web of science database, which is one of the most comprehensive citation database covering 944 articles in the selected field of "Stress Management" from a wide variety of Research Institutes all over the world and in vast area of science, social science and allied sciences. Twenty subject areas were selected to limit the study. These were Psychology, Public Environmental Occupational Health, Psychiatry, Nursing, Oncology, General Internal Medicine, Educational Research, Biomedical Social Sciences, Rehabilitation, Social Sciences Other Topics, Social Work, Substance Abuse, Behavioral Sciences, Family Studies, Religion, Women Studies, Sociology and social issues. The collected data was analyzed to conduct

the following studies:

1. Year Wise Distribution

The main objective of the chronological study is to find out current information marked by Web of Science in the field of "Stress Management". Through this study we will be able to know the number of articles published on the subject in a particular year.

Table 1: Year Wise Distribution

Year	Percentage	Ranking
2013	16.84%	1
2011	16.10%	2
2012	15.78%	3
2008	14.94%	4
2010	13.77%	5
2009	11.86%	6
2007	10.70%	7

The table 1 shows that 2007 and 2009 are the less productive years in the subject "Stress Management". However, 2013 evolves out to be the most productive year in the publication of literature on Stress Management followed by 2011, 2012 and 2008.

2.Ranking of Authors

The characteristics of any subject literature include not only the basic publishing patterns but also the contribution by the authors. There are certain authors in every subject who account for several papers in their field. However, some of them are well known in a given field. It is therefore important to know the eminent authors in the field of Stress Management. This information is useful equally for the librarian as well as the researcher.The prime objective of the study is to find out the authors whose contribution is significant in the field of Stress Management. For this purpose, a ranking list of top 25 productive authors has been prepared and presented in the table 6.2 in order of decreasing number of papers published in the selected field of Stress Management.

Table 2: Top Twenty Five Authors

S.N	Authors	Records	%	Rank
1	Antoni M H	24	2.5	1
2	Carver C S	11	1.2	2
3	Schneiderman N	8	1	3
4	Penedo F J	8	1	3
5	Antoni M	8	1	3
6	Lechner S C	7	1	3
7	Vargas S	6	1	3
8	Traeger L	6	1	3
9	Stanton A L	6	1	3
10	Prochaska J O	6	1	3
11	Ornish D	6	1	3
12	Hampel P	6	1	3
13	Benedict C	6	1	3
14	Weidner G	5	1	3
15	Prochaska J M	5	1	3
16	Pakenham K L	5	1	3
17	Lechner S	5	1	3
18	Lattie E	5	1	3
19	Stagl J	4	0.42	4
20	Soloway M	4	0.42	4
21	Rose R	4	0.42	4
22	Redding C A	4	0.42	4
23	Phillips K M	4	0.42	4
24	Pereira D B	4	0.42	4
25	Penedo F	4	0.42	4

Table 2 shows only the top twenty five authors, who have contributed a large number of papers in the field of stress management. The present ranked list may be of considerable help to know the name of the significant authors on the topic Stress Management during 2007-2013. The authors are ranked according to the number of publications. The above table shows that the most productive authors in the field of Stress Management is Antoni MH, who produced 24 papers in the field and thus occupying first rank in the list. Although this study is not sufficient to know the major contributors exactly, yet the present ranked list may be of considerable help to know the name of significant authors on the topic stress management during 2007-2013.

3. Ranking of periodicals

In the present era, journals play an important role in scientific communication of current information. Articles published in journals provide nascent micro thoughts to the researchers. It may be found that certain core journals contribute most of the literature on a particular topic. This information of core journals in various subjects will go a long way in preparing the subscription list of journals by the librarian.The present study is therefore meant to identify the most important journals, constituting most of the literature of research value in the field of stress management. All of the 944 Records were found to be published in a number of periodicals. However, table lists only top

25 periodicals in the field of stress management. The journals have been analyzed to identify the core and essential journals in the area of study.

Table 3: Ranking of Periodicals

S. No	Source Titles	Records	%	Ranking
1	Psycho Oncology	26	3	1
2	Annals of Behavioral Medicine	24	2.5	2
3	International Journal of Psychology	17	2	3
4	Psychology Health	16	2	3
5	Applied Psychophysiology and Biofeedback	15	1.5	4
6	Psychosomatic Medicine	14	1.5	4
7	International Journal of Behavioral Medicine	14	1.5	4
8	BMC Public Health	12	1.3	5
9	Stress and Health	11	1.2	6
10	Journal of Psychosomatic Research	11	1.2	6
11	Cochrane Database Of Systematic Reviews	11	1.2	6
12	Journal of Clinical Nursing	10	1.1	7
13	Health Psychology	10	1.1	7
14	Aids and Behavior	10	1.1	7
15	Journal of Advanced Nursing	9	1	8
16	Journal of Occupational And Environmental Medicine	8	1	8
17	Work : A Journal of Prevention Assessment Rehabilitation	7	1	8
18	Patient Education and Counseling	7	1	8
19	Occupational Medicine Oxford	7	1	8
20	Journal of Occupational Health Psychology	7	1	8
21	Journal of Occupational Health	7	1	8
22	Journal of Health Psychology	7	1	8
23	Journal of Consulting and Clinical Psychology	7	1	8
24	Journal of Clinical Oncology	7	1	8
25	Behavior Research and Therapy	7	1	8

Table 3 shows the first rank is being occupied by the journal titled *Psycho Oncology* which accounts for 26 articles of total records and next two positions are occupied by the journal *Annals of Behavioral*

Medicine and *International Journal of Psychology* with share of 24 and17 articles respectively.

This ranking list may be useful for the librarians in taking the policy decisions regarding the subscription list of periodicals on the subject of "Stress Management". It will be equally important for the documentalist in preparing an exhaustive documentation list and may be useful for the scientist, as they would know about the core journals carrying the highest percentage of items.

4. Country Wise Distribution

Certain countries give more research in particular subjects than others. This is very much useful not only for the information manager in finalizing the subscription list of periodicals but also for the research scholars as they tend to know the countries that are leaders in their respective field of research. Table 4 shows the list of 25 Countries which are involved in producing the research material on Stress Management during 2007-2013.

Table 6.4 Country Wise Distribution

S.NO.	Countries/Territories	Records	%
1	USA	412	43.64
2	Germany	77	8.16
3	England	57	6.04
4	Canada	52	5.51
5	Australia	50	5.30
6	Sweden	34	3.60
7	Netherlands	29	3.10
8	Japan	25	2.65
9	Spain	23	2.44
10	South Korea	23	2.44
11	Taiwan	21	2.23
12	Peoples R China	21	2.23
13	Iran	17	1.80
14	Italy	16	1.70
15	France	15	1.60
16	Turkey	14	1.50
17	Norway	12	1.30
18	Israel	12	1.30
13	New Zealand	11	1.17
20	Austria	11	1.17
21	Finland	10	1.06
22	Wales	9	1.0
23	Denmark	9	1.0
24	Brazil	9	1.0
25	South Africa	8	1.0

Note: *Increased number of records is due to*

collaboration of authors of different countries that is why a particular record received per count is equal to number of collaboration.

Table 4 contains list of 25 Countries producing research material on stress management. These countries have been ranked on the basis of frequency of occurrence of items. It was observed that 43.64% of total articles were published from *United States* only. This is followed by Germany, England and Canada which produced 8.15%, 6.03% and 5.5% respectively. It can be concluded that literary output of USA is more than other countries in the ranking list, USA accounted for 412 articles of total 944 items and thus occupies the first rank.

5.Language Wise Distribution

Literature on a particular subject may be published in different languages. For researcher and the information scientist, it is always important to know the language(s) in which the material of their area or specialization is published. The study provides information about the most dominant language(s) in which the literature on the subject "Stress Management" is being produced.

Table 5: Language Wise Distribution

S.NO.	Languages	Records	%
1	English	859	91
2	German	46	5.0
3	Spanish	11	1.2
4	Korean	8	1.0
5	French	8	1.0
6	Turkish	3	0.32
7	Italian	2	0.21
8	Slovenian	1	0.11
9	Portuguese	1	0.11
10	Polish	1	0.11
11	Dutch	1	0.11
12	Czech	1	0.11
13	Croatian	1	0.11
14	Afrikaans	1	0.11

Table 5 shows the distribution of these items according to the language of their publication. Out of the total 944 items, 859 articles i.e. about 90.99% articles were published in *English* language alone. 4.8% and 1.1% articles were published in German and Spanish maintaining the second and third rank respectively after English.

6. Form Wise Distribution

The literature on the topic "Stress Management" has been published in different forms such as articles, conference proceedings, letters, meeting abstracts, etc. The main objective of this analysis is to know the forms in which the literature is being published. The study helps the information scientists or librarians in knowing the most productive form of literature on the topic "Stress Management".

Table 6: Form Wise Distribution

S.NO.	Document Types	Records	%
1	Article	737	78.07
2	Review	87	9.216
3	Meeting Abstract	86	9.11
4	Book Review	11	1.165
5	Proceedings Paper	9	0.953
6	Editorial Material	8	0.85
7	Letter	2	0.212
8	Correction	2	0.212
9	News Item	1	0.106
10	Book Chapter	1	0.106

The table 6 shows that the literature on the subject is being published in different forms. Analysis of collected data shows that 737 items constituting 78.1% of the total records was published in the form of *articles* occupying first position. This is followed by other forms like *review* with 87 items i.e. 9.22% and *meeting abstracts* with 86 items i.e. 9.11% occupyingsecond and third positions respectively. It may thus be concluded that the *articles* published in journals are most vital form of media of communication among scientists belonging to the subject "Stress Management". It is apparent from the analysis of data that the articles are the most widely used form of documents in which most of the literature on the subject "Stress Management" has been published.

7.Subject Wise Distribution

According to the Bradford's Law of Scattering as explained earlier, most of the information on a given subject appears in certain core journals. However, a significant amount of literature is published in journals of other related or marginal subjects. This phenomenon is called scattering. This analysis has been done on the basis of subject field of periodicals publishing the literature.

Table 4.7 Subject Wise Distribution

S.No.	Research Areas	Records	%
1	Psychology	367	39
2	Public environmental occupational Health	178	19
3	Psychiatry	158	17
4	Nursing	114	12
5	Oncology	72	8
6	General internal medicine	60	6
7	Neurosciences neurology	57	6
8	Health care sciences services	50	5
9	Education educational research	49	5
10	Biomedical social sciences	41	4
11	Rehabilitation	39	4
12	Social sciences other topics	13	1
13	Social work	10	1
14	Substance abuse	9	1
15	Behavioural sciences	7	1
16	Family studies	6	1
17	Religion	5	1
18	Women's studies	4	0.42
19	Sociology	4	0.42
20	Social issues	4	0.42

Table 7 shows that the highest percentage of documents i.e. 38.87% of the total 944 records is published in the subject Psychology. The second, third and fourth place is occupied by public Environmental Occupational Health with 178 items constituting 18.85 %, Psychiatry with 158 items constituting 16.73% and Nursing having 114 items constituting 12.076% respectively.

Note: Increased number of records is due to the following two reasons:
1. *Interdisciplinary and multidisciplinary characters of subjects.*
2. *One subject is indexed in different subject headings in Web of Science.*

It is evident from the analysis that the twenty subject areas where most of the literature on Stress Management has been published, Psychology being the most productive subject area in the field of Stress Management occupies the first rank. There are also other main and related field which contains a significant number of articles published in the field of Stress Management like Occupational Health, Psychiatry, Nursing, Oncology, Health Care Science, and other allied sciences.

7. FINDINGS & CONCLUSION

The scientometric study on the Stress management research over a period of seven years, 2007-2013 was done to find out different publication patterns in the field. The study was conducted on the data collected from Science Citation Index Expanded (Web of Science database) during 2007-2013 on the subject "Stress Management". The main objective of the present study was to know the leading countries, contributors, form of the documents, language, core journals and most productive years in the subject of "Stress Management".The whole study was conducted by using scientometric tools and techniques. After the collection of data from Web of Science, it was analyzed and results were shown in the form of tables and graphs.

The following are the major findings of the study:
- ❖ It is found that the journal titled 'Psycho Oncology' published from New Jersey; USA is most productive, reporting 26 items i.e. 2.75% of the total literature. This is followed by 'Annals of Behavioral Medicine' published from New York, USA with 24 items i.e. 2.5% of the total literature.
- ❖ From the subject analysis, it is found that 367(38.87%) records belong to the subject "Psychology". It is followed by the subject "Public Environmental Occupational Health" and"Psychiatry" with 178 (18.85%) and 158 (16.73%) items respectively.
- ❖ The literature on 'Stress Management' was found to be published from various countries. USA is the leading country with 412 items i.e. 43.64% of the total literature. This is followed by Germany and England with 77(8.15%) and 57(6.03%) items respectively.
- ❖ The year wise distribution concludes that the highest amount of documents was produced in the year 2013 with 16.84% items on the subject "Stress Management". The other productive years were 2011, 2012 and 2008 which were accounted for 16.10%, 15.78% and14.94% items respectively.
- ❖ From language wise analysis, it is found that *English* is the language which is used very frequently by the contributors, as about 859 records i.e. about 90.99% documents on the subject "Stress Management" were published in English. It is followed by German, Spanish and Korean in which 46 i.e. 4.87 %, 11 i.e. 1.16% and 8 i.e. .847%

items were published respectively.

❖ Form wise distribution shows that the *Articles* are the most popular form of documents which are used by scientists on the subject of "Stress Management". It was observed that out of 944 items 737 items, constituting 78.7% are published in the form of articles. This is followed by others forms like review with 87 items constituting 9.21% and meeting abstracts with 86 items constituting 9.11% occupying second and third positions respectively.

❖ Author wise analysis has been done to know the contributors who produced most of the documents. It was observed that 24 items were produced by Antoni M H which is the highest number of record of all the authors thus occupying the first position. The first four ranked authors are Antoni, M. H., Carver, C. S., Schneiderman, N. and Penedo, F. J.

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