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Thyroid Research Publications: A Bibliometric Analysis

*R.ABHILASH BABU

**Dr L. N.UMA DEVI

* Research scholar, Dept. Of Library and information Science, Annamalai University, Annamalai Nagar- 608 002, Tamilnadu, India.

** Assistant Professor of Library and Information Science, Annamalai University, Annamalai Nagar- 608 002, Tamilnadu, India

Abstract

This paper attempts to statistically analyze Thyroid Research in terms of publication out-turn as provided by the resource *Web of Science*. This study focuses on year wise distribution, document type, author's research productivity, research areas, countries of contributing authors, together with journal wise and language wise assessment. The study unveils that multi authors have accorded 44622 articles during 2013 to 2018.

Keywords: Thyroid, Bibliometric Research, Geographical distribution, Local and Global citation scores.

Introduction

Bibliometrics is the application of quantitative analysis and statistics to publications and their accompanying citation counts by analyzing literature, inter-relationship among different branches of knowledge, productivity, authorship pattern, degree of collaboration, pattern of collection building, and their use.

Non communicable diseases are the major challenges of 21st century. Disease of the thyroid gland is among the most abundant endocrine disorders worldwide. Thyroid is a group of disorders that affects the thyroid gland. The thyroid gland is situated in the front part of neck and

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its hormones are vital for normal metabolism. Regulating thyroid function is a complex and important process that involves several factors, including iodide and four thyroid hormones. Thyroid hormones control how your body uses energy, so they affect the way nearly every organ in your body works—even the way your heart beats. Sometimes the thyroid makes too much or too little of these hormones. Too much thyroid hormone is called hyperthyroidism and can cause many of your body's functions to speed up. "Hyper" means the thyroid is overactive. Too little thyroid hormone is called hypothyroidism and can cause many of your body's functions to slow down.

Thyroid disorders can range from a harmless goiter (enlarged gland) to life-threatening cancer. The most prevalent thyroid problems include:

(1) **Thyroid Nodule:** Thyroid nodule is a discrete lesion within the thyroid gland which are common and carry a 4–6.5 % risk of malignancy. The malignant category includes papillary cancer, medullary cancer, thyroid lymphoma, anaplastic cancer, and cancer metastatic to the thyroid.

(2) **Goitre**: A goiter is an enlarged thyroid gland occurring due to iodine deficiency. Most simple goiters are preventable through adequate intake of iodine, Surgery to reduce the size of swelling is reserved for cases where the goiter is causing troublesome symptoms, such as difficulty breathing or swallowing.

(3) **Thyroiditis**: Thyroiditis is an inflammation (not an infection) of the thyroid gland can lead to over- and under-production of thyroid hormones that control metabolism.

(4) **Hypothyroidism:** Hypothyroidism (underactive thyroid) is a condition in which your thyroid gland doesn't produce enough of certain crucial hormones. Untreated hypothyroidism can lead to goiter, heart problems, mental health issues, myxedema, infertility and birth defects.

(5) **Hyperthyroidism:** Hyperthyroidism (overactive thyroid) occurs when your thyroid gland produces too much of the hormone thyroxine. Hyperthyroidism can accelerate your body's metabolism, causing unintentional weight loss and a rapid or irregular heartbeat. Hyperthyroidism can lead to brittle bones, eye problems, red swollen skin, heart problems.

(6) **Thyroid cancer**: Thyroid Cancer occurs when cells in the thyroid undergo genetic changes (mutations). The mutations allow the cells to grow and multiply rapidly. Types of thyroid cancer:

- **Papillary thyroid cancer** - The most common form of thyroid cancer, papillary thyroid cancer arises from follicular cells, which produce and store thyroid hormones, most often it affects people ages 30 to 50.
- **Follicular thyroid cancer** - Follicular thyroid cancer also arises from the follicular cells of the thyroid. It usually affects people older than age 50.
- **Medullary thyroid cancer** - Medullary thyroid cancer begins in thyroid cells called C cells, which produce the hormone calcitonin. Elevated levels of calcitonin in the blood can indicate medullary thyroid cancer at a very early stage
- **Anaplastic thyroid cancer** - Anaplastic thyroid cancer is a rare and rapidly growing cancer that is very difficult to treat, typically occurs in adults age 60 and older.
- **Thyroid lymphoma** - Thyroid lymphoma is a rare form of thyroid cancer that begins in the immune system cells in the thyroid and grows very quickly, typically occurs in older adults.

The best prevention of thyroid disease is adequate iodine nutrition, which is the most preventable cause of mental retardation. Smoking cessation, control of alcohol consumption, and thyroid autoimmunity (positive antibody alone) are listed among measures of primary prevention of thyroid disorders.

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Objectives

The main objective of the study is to analyze the following bibliometric characteristics of the thyroid research:

1. To analyze the year of thyroid research output during the year 2013 – 2018.
2. To ascertain the Document type wise distribution in Thyroid Research
3. To find out the collaborative authors in the Thyroid Research Output.
4. To examine the Author wise Contribution in Thyroid Research
5. To persue the top journals in Thyroid Research Output.
6. To study the Collaboration pattern country wise
7. To portray the Thyroid Research Output Institution wise.
8. To determine the Word wise output in Thyroid Research.
9. To identify the Language wise Contribution in Thyroid Research.

Methodology

Documents used in this study were based on the online database Web of Science and the methodology administered is bibliometric analysis of articles published from 2013 to 2018 (6years). The keyword "**thyroid**" has been used as the search term in the field of topic and the time period 'All Years'. This study aimed to bring out the prevalence of research output in thyroid malignancy during the twenties.

Data collection

A total of 44622 records on thyroid were retrieved for the study from 2013-2018. The articles published were analysed for the type of the articles (editorial, review article, original article, case report, letter to the editor, abstracts, and others). These data were organized, calculated, tabulated, analyzed and presented by using simple arithmetic and statistical methods to arrive at the desired results. The data were downloaded and exported to excel file to tabulate them *(Data as per on 15th May, 2019).*

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Limitations

The study is strictly confined to thyroid research and is not centered to any specific thyroid disorders. The year of study limits from 2013 to 2018. One of the limitations of the study is that the scope is confined to cover only the publications cited in Web of Science *(ugc).*

Analysis and Interpretation

Table-1 Year wise publication Thyroid research

Note: TLCS: Total Local Citation Score, TGLS: Total Global Citation Score

S.NO	Publication Year	Recs	Percent
1	2013	5989	13.4
2	2014	6652	14.9
3	2015	7570	17.0
4	2016	8089	18.1
5	2017	8139	18.2
6	2018	8183	18.4
	Total	**44622**	100.00

During the span of 2013-2018 scientists all over the world have produced a total of 44622 publications on thyroid research. Table-1 shows the year wise distribution of papers published. There were only 5989 records in 2013 and then it increased steadily and reached 8183 in 2018. The average number of publications per year was 7437. The emerging broad spectrum of global thyroid disorders and thyroid cancer is a trigger for more research and publications in this particular field.

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Table-2 Document wise output in Thyroid research

S.NO	Document Type	Recs	Percent	TLCS	TGCS
1	Article	31988	71.7	100828	258118
2	Review	4574	10.3	19838	60471
3	Meeting Abstract	4518	10.1	74	301
4	Editorial Material	1535	3.4	2307	4554
5	Letter	1187	2.7	1490	2224
6	Article; Proceedings Paper	389	0.9	1059	2451
7	Correction	214	0.5	52	108
8	Review; Book Chapter	89	0.2	346	834
9	News Item	62	0.1	15	25
10	Article; Book Chapter	24	0.1	76	156
	Total		100.00	-	-

Table 2 portrays 10 document types researched for this study yielding a total of 44580 records during the course of study. The productivity of thyroid research is spread over a variety of publication media like Journal Articles, Review, Proceedings papers, Meeting abstracts, Editorial materials, Book review, etc. The most scholarly communication of scientific research is published in Journals (31988, 71.7%, TLCS is 100828 and TGCS is 258118), followed by review and other forms.

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Table-3 Collaborative Authors in Thyroid research output

SL.NO	YEAR	SINGLE	DOUBLE	THREE	FOUR	FIVE	ABOVE FIVE	TOTAL
1	2013	300	543	713	741	773	2919	5989
2	2014	304	600	756	815	846	3331	6652
3	2015	376	672	847	992	1003	3680	7570
4	2016	412	683	941	1043	997	4013	8089
5	2017	350	728	919	1054	1033	4055	8139
6	2018	375	676	958	945	1102	4127	8183
	TOTAL	2117	3902	5134	5590	5754	22125	44622

Table-3 illustrates the authorship pattern of contribution. It is noticed that the year 2016 marks highest contribution of 412 out of 2117 records by single authors; 728 out of 3902 records by double author in the year 2017 ; 958 out of 5134 records by three authors in the year 2018 ; 1054 out of 5590 records by four authors in the year 2017 and 1102 out of 5754 records by five authors in the year 2018. It is found that out of 44622 articles, above five authored articles are the highest with 22125. The single author contribution is low when related to multi authored papers. A prominent note of the study is that the majority of the articles are contributed by joint authors.

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Table-4 Top Ten Authors in Thyroid research

SL. NO	Author	Recs	Percent	TLCS	TLCS/t	TLCSx	TGCS	TGCS/t	TLCR
1	Wang Y	248	0.6	652	169.43	492	1412	396.58	1009
2	Kim JH	214	0.5	1169	367.85	810	1720	566.78	1280
3	Lee JH	210	0.5	1760	479.81	1045	2409	692.60	1401
4	Zhang L	175	0.4	399	110.55	318	1259	359.05	616
5	Zhang Y	161	0.4	348	88.58	323	1071	314.98	559
6	Peeters RP	155	0.3	1858	549.71	1417	2677	805.21	1204
7	Lee J	154	0.3	473	121.20	403	934	286.61	487
8	Tuttle RM	151	0.3	5058	1414.63	4431	6078	1720.78	842
9	Miyauchi A	150	0.3	1243	354.45	976	1531	454.25	590
10	Baek JH	145	0.3	1751	480.88	1007	2151	622.08	1489

From 2013 to 2018, 44622 papers were published and Table-4 details the top 10 authors in thyroid research. This table highlights Wang Y as the topper with 248 records. He obtained 652 TLCS, 1412 TGCS and 1009 TLCR. The second, third and fourth places are occupied by Kim J H, Lee J H and Zhang Y.

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Table-5 Top Ten Journals in Thyroid research

SL. NO	JOURNAL	RECS	PERCENT	TLCS	TLCS/t	TGCS	TGCS/t	TLCR
1	THYROID	1216	2.7	14601	3879.7	18753	5151.28	6403
2	JOURNAL OF CLINICAL ENDOCRINOLOGY& METABOLISM	753	1.7	10246	2274.41	15294	3520.81	2880
3	PLOS ONE	727	1.6	0	0	7575	1764.81	1675
4	EUROPEAN JOURNAL OF NUCLEAR MEDICINE AND MOLECULAR IMAGING	655	1.5	486	124.68	1344	340.45	323
5	ENDOCRINE	483	1.1	2298	618.91	3473	982.5	2426
6	CLINICAL ENDOCRINOLOGY	405	0.9	2763	696.28	3802	1014.95	1769
7	MODERN PATHOLOGY	367	0.8	365	120.75	946	262.45	184
8	LABORATORY INVESTIGATION	340	0.8	18	5.83	46	17.9	40
9	ONCOTARGET	323	0.7	848	299.76	2535	870.15	1792
10	MEDICINE	308	0.7	0	0	891	307.71	1323

TLCS/t - Total Local Citation Score per year

TGCS/t - Total Global Citation Score per year

TLCR - Total Local Cited References

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The literature of thyroid research (2013 to 7th may. 2018) retrieved from Web of Science scattered over 10 top journals is sketched in table 5. The journal *THYROID* occupies the top position with 1216 (2.7 %, TLCS 14601, TLCS/t 3879.7, TGCS 18753, TGCS/t 5151. 28 and TLCR 6403) records followed by Journal of Clinical Endocrinology & Metabolism and Plos One that came second and third respectively. Journal of Medicine with 308 records ranks last among the 10 journals.

Table-6 Top Ten Country wise of Thyroid research

SL.NO	COUNTRY	RECS	PERCENT	TLCS	TGCS
1	USA	11374	25.5	52070	140776
2	Peoples R China	5830	13.1	12833	41597
3	Italy	3754	8.4	21477	44043
4	South Korea	2787	6.2	12526	22883
5	Germany	2438	5.5	9508	26292
6	Japan	2250	5	7050	15631
7	UK	2070	4.6	7998	25236
8	Turkey	2014	4.5	2965	6240
9	India	1725	3.9	1721	5475
10	France	1576	3.5	8864	25817

Researchers in bibliometric studies are interested to find the countries which are contributing the best in any given field and Table-6 displays the top 10 countries in thyroid research publications. USA dominates with 11374 records and china with 5830 records in second position followed by Italy, South Korea, Germany , and so. India has also marked its vibrant contribution among these countries and France (1576) has been last ranked in the top 10 country wise outlay.

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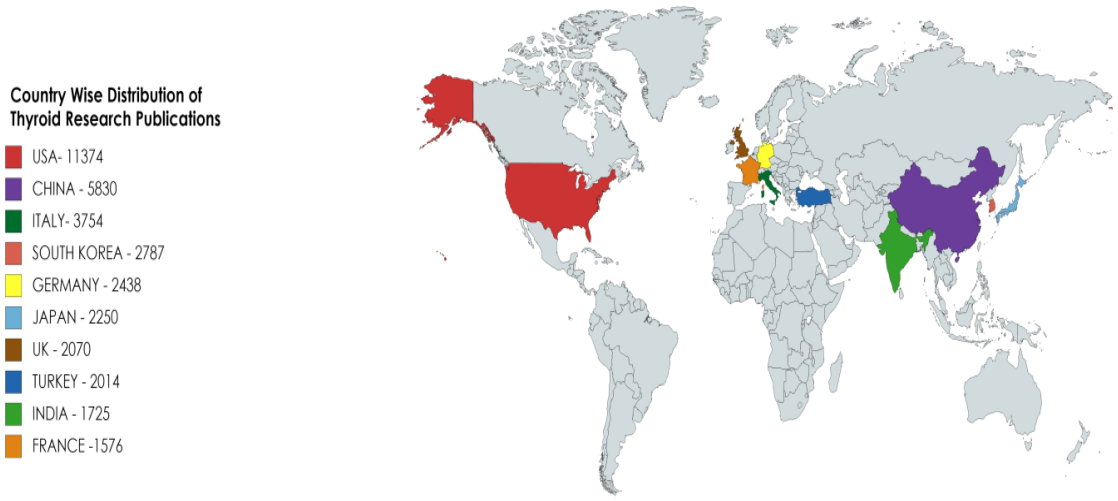


Table-7 Top ten Institutions wise of Thyroid research

SL.NO	INSTITUTION	RECS	PERCENT	TLCS	TGCS
1	Univ Pisa	475	1.1	5362	8205
2	Mem Sloan Kettering Canc Ctr	473	1.1	7455	13766
3	Shanghai Jiao Tong Univ	436	1	1119	2937
4	Yonsei Univ	426	1	2090	3656
5	Univ Texas MD Anderson Canc Ctr	425	1	6325	12213
6	Seoul Natl Univ	412	0.9	1953	3416
7	Harvard Univ	391	0.9	5743	10756
8	Mayo Clin	389	0.9	4817	8139
9	Sungkyunkwan Univ	359	0.8	1919	2983
10	Johns Hopkins Univ	353	0.8	5257	8483

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Distribution of top 10 Institution wise of thyroid research is displayed in table 7. The research articles emerged from various research institutes, universities and affiliated colleges. The Univ Pisa tops with 475 articles (1.1%, TLCS 5362, and TGCS 8205), followed by Mem Sloan Kettering Can Ctr with 473 articles (1.1%, TLCS 7455 and TGCS 13766) in the second position and Jojns Hopkins University ranked last with 353 records (0.8%, TLCS 5257 and TGCS 8483) among the top 10 institution list. HistCite is designed to analyze and visualize literature searches made on Web of Science Core Collection. While analyzing the top 10 institution wise research publications, the data in the first field was shown unknown, whereby the data was not well defined or identified , so the study was tabulated from the second to eleventh text field exported from the HistCite.

Table-8 Word wise of Thyroid research

SL.NO	WORDS	RECS	PERCENT	TLCS	TGCS
1	THYROID	24764	55.5	92868	151847
2	CANCER	7540	16.9	32025	82023
3	CARCINOMA	5345	12	17492	29027
4	PATIENTS	5296	11.9	15625	30756
5	PAPILLARY	4169	9.3	19697	28449
6	HORMONE	2696	6	9242	18570
7	DISEASE	2555	5.7	7019	15400
8	RISK	2152	4.8	8320	18503
9	CASE	2130	4.8	1776	4908
10	ANALYSIS	2094	4.7	7637	16941

Table – 8 provides a snapshot of the top 10 words of thyroid research. The increasing cases in thyroid disorders promote different areas of research exploration. The table grades Thyroid as the major word in research with 24764 articles (55.5%, TLCS 92868 and TGCS

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151847) , Cancer in the second place with 7540 records (16.9%, TLCS- 32025 and TGCS- 82023) and Analysis as the least word in research with 2094 articles (4.7%, TLCS- 7637 and TGCS- 16941) in the top 10 list.

Table-9 Languages wise of Thyroid research output.

S.NO	Language	Recs	Percent	TLCS	TGCS
1	English	43395	97.2	125625	328065
2	German	359	0.8	250	477
3	Spanish	302	0.7	95	273
4	French	227	0.5	47	245
5	Portuguese	77	0.2	52	177
6	Turkish	77	0.2	8	26
7	Russian	59	0.1	3	9
8	Polish	38	0.1	9	29
9	Hungarian	25	0.1	6	23
10	Korean	17	0	15	21

It is also important to identify the languages of publication as exhibited in (Table 9). English is the predominant language of publications. Out of the 44622 records retrieved, English occupies the first position with 43395 (97.2 %, 125625 TLCS and 328065 TGCS) records. Relatively the number of publications in non-English is less, due to the journal selection and coverage policy of the Web of Science database.

Conclusion

The quality and quantity of scientific works is often judged by the outputs mainly in the form of publications. The present work had taken up a detailed analysis on thyroid research

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publications over a period of six years (2013-2018). In general there is a progressive increase in the number of publications of research on Thyroid Research. The highest percentage of publication has been published in the year 2018 (18.4%) and the lowest percentage of have been published in the year 2013 (13.4%) and the study highlights the dominance of multi-authored articles to single authored ones. USA and China have contributed major research works in the field and India is not far behind.

References

Selvi, M. and Dhanavandan, S.(2015). "An analysis of the Research Publication output on Gen omes- A Study", *Information retrieval. & Mgt.*3 (5) 23-25.

Thirumagal, A. and Niruba S.S. (2013). "Mapping of scholarly output in could Computing: A Bibliometric study". *SRELS Journal of information management*, 50(5): 667-678.

Morillo, F. Bordons, M. and Gomez, I. (2001). *An approach to interdisciplinary through bibliometric indicators, Scientometrics*, 51(1), 203-222.

Garfield, E. (1983). Citation Indexing –its theory and application in science, technology and humanities. Philadelphia: ISI Press.

Sangam, S.L. & Mogali, S.S. (2009). The concept of H-index, *PEARL Journal of Library and Information Science*, 3(4), 1-4.

Yu, J. J., M. H. Wang and Y. S. Ho 2012. A bibliometric analysis of research papers published on photosynthesis, 1992-2009. *Photosynthetica*, *50*(1): 5-14.