

Scientometric dimension on gender in worldwide thyroid cancer: A study based on web of science database

S. Raja¹, P. Ramkumar² and P. Viji³

*Library, VIT University Chennai Campus, Chennai-48;*²*Library, AMET University, Chennai - 603112, India*

lisraja1979@gmail.com, ramkumar_pe@yahoo.com

Abstract

This study has been carried out to analyze the research field of Gender in thyroid cancer in terms of publication output as per science citation index (1991- Mar 2010). During 1991- Mar 2010 a total of 380 papers were published by the scientists in the field of Gender in thyroid cancer. The average number of published per year 10.78%. The highest number of papers 41 were published in 2006 and 2007. There were 50 countries involved in the research in this field. USA is top producing country with 140 publications (36.84%) followed by Italy with 44 publications (11.57%), Japan with 32 publications (8.42%), Germany with 31 publications (8.15%), Sweden with 19 publications (5.00%). The most productive author is Clark OH with 11 papers dealing with thyroid cancer and 2.89% of all papers published in this research field. The most preferred journals by Thyroid topped the list with 30 (7.89%) followed by Journal of Clinical Endocrinology & Metabolism with 27 (7.10%) publications, Cancer with 22 (5.78%) publications, World Journal of Surgery with 18(4.73%) publications, Surgery with 13 publications (3.42%). NCI is top producing Institution with 15 (3.94%) publication followed by Karolinska Institute, University of California San Francisco, University of Pisa each 13 publications. Thyroid topped the list with 273 publication followed by Cancer with 131 publications, Carcinoma with 112 publications.

Keywords: Thyroid, Cancer, Carcinoma, Patients. Scientometric analysis, Scientometric study.

Introduction

Nowadays the scientometrics, studying mainly the quantitative aspects of science (in cognitive, as well as in social context), has strengthened its position as a significant component of the general Science of science, and it appears to be a completed disciplinary field with clearly outlined subjects of research, specific set of good elaborated research methods and techniques, a significant concerning size and geographical scope research community, numerous research institutions. Research publications are clearly one of the quantitative measures for the basic research activity in a country. It must be added, however, that what excites the common man, as well as the scientific community, are the peaks of scientific and technological achievement, not just the statistics on publications. Many scientometrics studies have appeared in the literature to focus on the performance of science in the field of Gender in Thyroid Cancer.

Objective

The main objective of the study is to present the growth of world literature in gender in thyroid cancer deposition and make the quantitative assessment of the research in terms of year-wise research output, geographical distribution of research output, nature of collaboration, characteristics of highly productive institution and the

channel of communication used by the scientists.

Methodology

Data was collected from the Science Citation Index (SCI) which is available via the Web of Science (WoS). The WoS is the search platform provided by Thomson Reuters (the former Thomson Scientific emerged from the Institute for Scientific Information (ISI) in Philadelphia). SCI database is one of the very comprehensive databases covering all aspects of science. The study period (1991-Mar 2010) is selected as the database is available in machine from since 1982. The search string "Gender in Thyroid Cancer" in the "Basic search" field of SCI was used for the year s 1991-Mar 2010 to download the records on the subjects 'gender in thyroid cancer'. A total of 380 records were downloaded and analyzed by using the Histcite software application as per the objectives of the study.

Results and discussion

During 1991- Mar 2010 a total of 380 publication were published in Gender in thyroid cancer by various countries. The average number of publications produced per year was 19.00%. The highest number of publications 41 was produced in 2006 and 2007. Table 1(a) was given year wise growth and collaboration rate in gender in thyroid cancer. It can be clearly visualized from the table 1(a) that growth of the literature was very

Table 1(a). Year wise distribution of documents

| Publication Year | Records | TLCS | TGCS |
|------------------|---------|------|------|
| 1991 | 3 | 3 | 65 |
| 1992 | 2 | 14 | 206 |
| 1993 | 2 | 5 | 58 |
| 1994 | 3 | 4 | 88 |
| 1995 | 6 | 20 | 227 |
| 1996 | 7 | 12 | 336 |
| 1997 | 13 | 47 | 610 |
| 1998 | 14 | 23 | 549 |
| 1999 | 23 | 38 | 453 |
| 2000 | 13 | 19 | 448 |
| 2001 | 19 | 26 | 422 |
| 2002 | 23 | 26 | 344 |
| 2003 | 29 | 26 | 604 |
| 2004 | 38 | 43 | 722 |
| 2005 | 26 | 18 | 437 |
| 2006 | 41 | 20 | 608 |
| 2007 | 41 | 19 | 406 |
| 2008 | 38 | 9 | 146 |
| 2009 | 34 | 1 | 24 |
| 2010 | 5 | 0 | 0 |

"Scientometric study of thyroid cancer"

<http://www.indjst.org>

low during 2006-Mar 2010 and it peaked during 1996-2000. It indicates that research in Gender in thyroid cancer received a major impetus this period. An exponential growth in number of publication was observed during 1991- Mar 2010. The highest growth rate (4.38%) was found during 1996-2000 with 70 publication followed by (1.92%) with 135 publication, during 2001-2005, (1.19%) with 159 publications, during 2006-Mar 2010. Table 1(b) gives growth rate of publications in gender in thyroid cancer research in different five years.

There were as many as 50 countries carrying out research in the field of gender in thyroid cancer and produced 1855 authorships. Table 2 provides a list of countries whose research output is more than 50 publications. USA is top producing country with 140 publications (36.84%) followed by Italy with 44 publications (11.57%), Japan with 32 publications (8.42%), Germany with 31 Publications (8.15%), Sweden with 19 Publications (5.00%).

The most productive author is Clark OH with 11 papers dealing with Gender in thyroid cancer and 2.89% of all papers published in this research field. The authors of the seminal publication on Gender in thyroid cancer given Table 3, Lin JD and Chao TC, appear on rank 2 (10 papers) and 3(9 papers), respectively.

The most productive Journal is Thyroid with 30 papers dealing with Gender in thyroid cancer and 7.89% of all papers published in this research field. The journal of the seminal publication on Gender in thyroid cancer given Table 4, Journal of Clinical Endocrinology & Metabolism and Cancer, appear on rank 2 (7.10%) and 3(5.78%), respectively.

Keywords are one of the best scientometric indicators to understand and grasp instantaneously the thought content of the papers and to find out the growth of the subject field. Analysis

Table 1 (b). Exponential growth in number of publication was observed during 1978-2009

| Five Year blocks | No of Publication | Growth Rate |
|------------------|-------------------|-------------|
| 1991-1995 | 16 | - |
| 1996-2000 | 70 | 4.38 |
| 2001-2005 | 135 | 1.92 |
| 2006-March 2010 | 159 | 1.19 |

Table 2. Country wise documents distribution

| Country | Records | TLCS | TGCS |
|-----------------|---------|------|------|
| USA | 140 | 185 | 3690 |
| Italy | 44 | 58 | 920 |
| Japan | 32 | 42 | 564 |
| Germany | 31 | 28 | 415 |
| Sweden | 19 | 21 | 328 |
| Taiwan | 18 | 5 | 152 |
| France | 17 | 19 | 427 |
| Turkey | 14 | 3 | 51 |
| Byelarus | 12 | 31 | 418 |
| Spain | 12 | 12 | 211 |
| UK | 12 | 6 | 211 |
| South Korea | 10 | 1 | 54 |
| Canada | 9 | 13 | 248 |
| Finland | 9 | 3 | 105 |
| Greece | 9 | 9 | 99 |
| Israel | 8 | 6 | 172 |
| Norway | 8 | 17 | 191 |
| Peoples R China | 8 | 9 | 91 |
| Russia | 8 | 25 | 297 |
| Brazil | 7 | 8 | 124 |

Table 3. Top 20 most productive authors with respect to the number of article dealing with gender in thyroid cancer Source: SCI (WoS)

| Author | Records | TLCS | TGCS |
|-----------------|---------|------|------|
| Clark OH | 11 | 13 | 317 |
| Lin JD | 10 | 4 | 104 |
| Chao TC | 9 | 4 | 101 |
| Ron E | 9 | 11 | 320 |
| Duh QY | 8 | 9 | 234 |
| Pinchera A | 8 | 27 | 367 |
| Antonelli A | 7 | 6 | 162 |
| Elisei R | 7 | 18 | 276 |
| Pacini F | 7 | 27 | 353 |
| Demidchik EP | 6 | 21 | 306 |
| Fallahi P | 6 | 6 | 79 |
| Ferrari SM | 6 | 6 | 79 |
| Ito Y | 6 | 5 | 49 |
| Kebebew E | 6 | 8 | 245 |
| Miyauchi A | 6 | 5 | 49 |
| Reiners C | 6 | 10 | 127 |
| Siperstein AE | 6 | 7 | 224 |
| Tuttle RM | 6 | 8 | 209 |
| Bhattacharyya N | 5 | 8 | 63 |
| Ferrannini E | 5 | 6 | 79 |

appeared either on the title or assigned by the indexer or the author himself will help in knowing in which direction the knowledge grows. The high frequency keywords will enable us to understand the various aspects of Gender in thyroid cancer under study. The high frequency keywords were: Thyroid 273(23.23%), Cancer 131(11.14%), Carcinoma 112 (9.538%), Patients 65 (5.53%), and Papillary 20(1.70%) (Table 5).

Gender in Thyroid Cancer Scientists communicated their research results through a variety of communication channels. Table 6 provides the distribution of publications in various channels of communication. It was observed that 82.36 percent of the literature was published in Article followed by 12.89 percent in proceeding paper, 2.89 percent in Review, 0.78 percent in editorial Material 0.78 percent in Letter and 0.26 percent in Meeting Abstract.

Table.7 The Gender in thyroid cancer have contributed more predominantly in English than any other languages as 375(98.68%) publications were in English followed by German with 2 (0.52%) publications.

There were 317 institutions involved in research activity in the field of Gender in thyroid cancer. Table 8 provides publication productivity of top 20 institutions. NCI is top producing Institution with 15 (3.94%) publication followed by Karolinska Institute, University of California San Francisco, University of Pisa each 13 publications.

Summary

In this study the literature on Gender in thyroid cancer, a promising new material, has been analyzed by scientometric methods. The time evolution of the overall number of citations reveals that the impact increase of the Gender in thyroid cancer papers is possibly going to outrun the impact increase of the related research fields on Cancer and Carcinoma. The highest growth rate (4.38%) was found during 1996-2000 with 70 publication followed by

(1.92%) with 135 publication, during 2001-2005, (1.19%) with 159 publications, during 2006-Mar 2010.

The most productive author is Clark OH with 11 papers dealing with gender in thyroid cancer and 2.89% of all papers published in this research field. USA is top producing country with 140 publications (36.84%) followed by Italy with 44 publications (11.57%), Japan with 32 publications (8.42%), Germany with 31 Publications (8.15%), Sweden with 19 Publications (5.00%).

A research landscape has been established illustrating the major research clusters with regard to the clustering concept. The top 20 most productive research journal of the seminal publication on gender in thyroid cancer, Journal is Thyroid with 30 papers dealing with Gender in thyroid cancer and 7.89% of all papers published in this

Table 4. Top 20 most productive journal with respect to the number of articles dealing with gender in thyroid cancer.

Source: SCI (WoS)

| Journal | Records | TLCS | TGCS |
|---|---------|------|------|
| Thyroid | 30 | 39 | 569 |
| Journal of Clinical Endocrinology & Metabolism | 27 | 41 | 981 |
| cancer | 22 | 57 | 1070 |
| World Journal of Surgery | 18 | 23 | 242 |
| Surgery | 13 | 32 | 333 |
| Cancer Causes & Control | 11 | 24 | 260 |
| Clinical Endocrinology | 11 | 8 | 182 |
| International Journal of Cancer | 9 | 3 | 152 |
| Laryngoscope | 7 | 5 | 82 |
| Radiation Research | 7 | 14 | 319 |
| International Journal of Radiation Oncology Biology Physics | 6 | 0 | 50 |
| American Journal of Surgery | 5 | 14 | 184 |
| Annals of Surgical Oncology | 5 | 6 | 87 |
| BMC Cancer | 5 | 0 | 24 |
| Cancer Journal | 5 | 1 | 23 |
| Endocrine-related cancer | 5 | 12 | 113 |
| Head and Neck-Journal for the Sciences and Specialties of the Head and Neck | 5 | 10 | 200 |
| Journal of the American College of Surgeons | 5 | 2 | 76 |
| Langenbecks Archives of Surgery | 5 | 2 | 20 |
| Oncology Reports | 5 | 3 | 17 |

research field. The high frequency keywords will enable us to understand the various aspects of Gender in thyroid cancer under study. The high frequency keywords were: Thyroid 273(23.23%), Cancer 131(11.14%), Carcinoma 112 (9.538%), Patients 65 (5.53%), and Papillary 20(1.70%). It was observed that 82.36 percent of the

Table 5. Word-wise distribution of Documents (First-20 Documents)

| Topics | Records | TLCS | TGCS |
|----------------|---------|------|------|
| Thyroid | 273 | 326 | 4982 |
| Cancer | 131 | 109 | 1997 |
| Carcinoma | 112 | 188 | 2787 |
| Patients | 65 | 56 | 1105 |
| Papillary | 64 | 64 | 868 |
| Differentiated | 45 | 47 | 750 |
| Factors | 43 | 117 | 1407 |
| Prognostic | 40 | 102 | 1439 |
| Risk | 31 | 47 | 657 |
| Analysis | 27 | 34 | 378 |
| Clinical | 26 | 19 | 615 |
| Follicular | 25 | 57 | 501 |
| Treatment | 24 | 8 | 377 |
| Incidence | 23 | 21 | 458 |
| Survival | 23 | 25 | 542 |
| Cell | 19 | 20 | 256 |
| Disease | 19 | 7 | 173 |
| Expression | 15 | 3 | 121 |
| Children | 14 | 35 | 462 |
| Gender | 14 | 14 | 133 |

Table 6. Source wise distribution documents

| Document Type | Records | TLCS | TGCS |
|--------------------|---------|------|------|
| Article | 313 | 274 | 5048 |
| Proceedings paper | 49 | 90 | 1237 |
| Review | 11 | 4 | 365 |
| Editorial material | 3 | 4 | 100 |
| Letter | 3 | 1 | 3 |
| Meeting abstract | 1 | 0 | 0 |

Table 7. Language wise distribution documents

| Language | Records | TLCS | TGCS |
|----------|---------|------|------|
| English | 375 | 372 | 6741 |
| German | 2 | 1 | 11 |
| French | 1 | 0 | 1 |
| Korean | 1 | 0 | 0 |
| Spanish | 1 | 0 | 0 |

literature was published in Article followed by 12.89 percent in proceeding paper, 2.89 percent in Review, 0.78 percent in editorial

Material 0.78 percent in Letter and 0.26 percent in Meeting Abstract, News items The Gender in thyroid cancer have contributed more predominantly in English than any other languages as 375 (98.68%) publications. Among the top 20 most productive research Institution there are NCI is top producing institution with 15 (3.94%) publication followed by Karolinska Institute, University of California San Francisco, University of Pisa each 13 publications.

Finally, a citation graph (Fig.1a,b) has been constructed revealing two unequally pronounced clusters of Gender in thyroid cancer related publications: the pre-

Table 8. Institution wise documents distribution (First - 20 Documents)

| Institution | Records | TLCS | TGCS |
|--|---------|------|------|
| NCI | 15 | 23 | 468 |
| Karolinska Inst | 13 | 15 | 213 |
| University California San Francisco | 13 | 19 | 409 |
| University of Pisa | 13 | 26 | 462 |
| Memorial Sloan Kettering Cancer Center | 12 | 41 | 751 |
| University Milan | 11 | 16 | 206 |
| University Texas | 11 | 8 | 142 |
| Chang Gung University | 8 | 2 | 66 |
| Harvard University | 8 | 16 | 251 |
| Brigham & Women's Hospital | 6 | 12 | 188 |
| Chang Gung Memorial Hospital | 6 | 1 | 37 |
| Tel Aviv University | 6 | 3 | 145 |
| University Wurzburg | 6 | 10 | 127 |
| Institute of Gustave Roussy | 4 | 12 | 239 |
| Institute Oncol | 4 | 10 | 46 |
| Int Agcy Res Canc | 4 | 4 | 52 |
| Ist Ric Farmacol Mario Negri | 4 | 10 | 76 |
| Univ Birmingham | 4 | 2 | 74 |
| Univ Roma La Sapienza | 4 | 9 | 111 |
| Univ So Calif | 4 | 11 | 107 |

Fig. 1a. GCS Gender in thyroid cancer

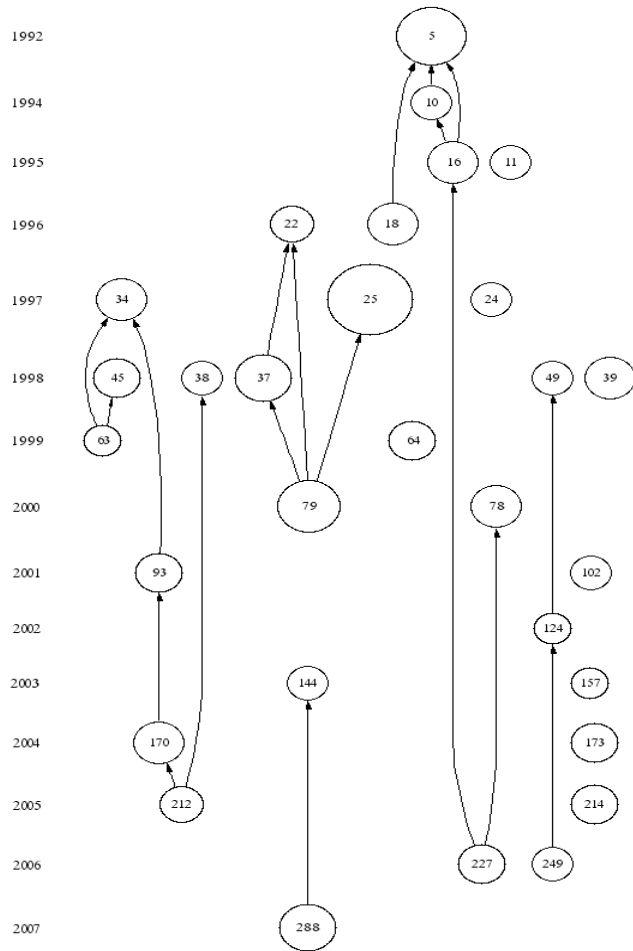
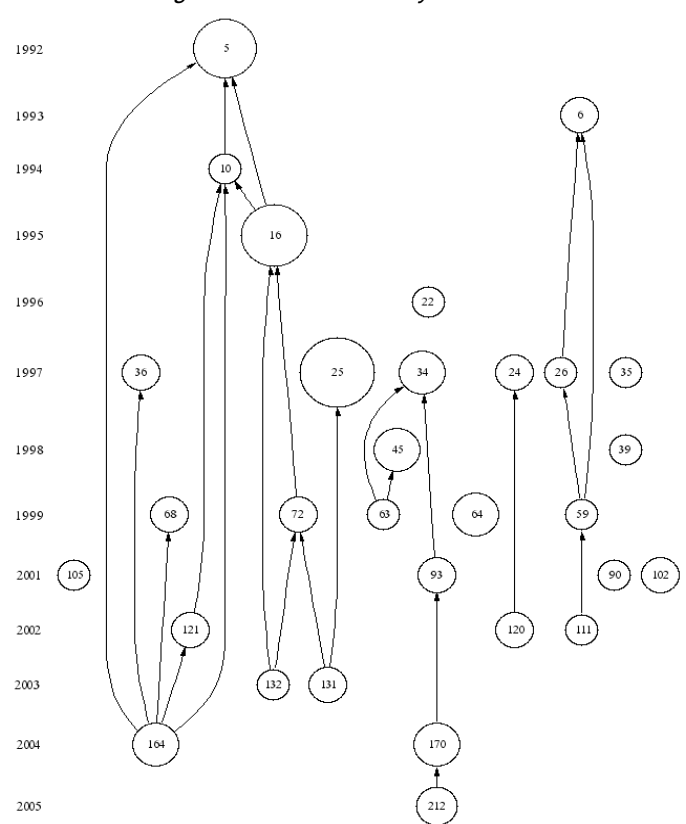


Fig. 1b. LCS Gender in thyroid cancer



2008 articles being less cross-linked and the past-2008 papers being strongly networked with some of them being heavily cited already a few years after their publication. We suggest for tracking citation record of papers so that the impact of publications in Gender in thyroid cancer may be visible.

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