

Collaboration in Speech and Hearing Research Literature: A Bibliometric Analysis

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Abstract

This study aims to analyze the collaboration in speech and hearing research literature, subject frontiers and institution-wise author productivity, using the 'Journal of All India Institute of Speech and Hearing (JAIISH)', a publication of All India Institute of Speech and Hearing (AIISH), Mysuru, Karnataka, India. The journal was started in the year 1970. It is being published regularly for almost forty long years. It is an annual publication. For the purpose of data collection six recently published volumes of the said journal covering, 2010 to 2015 were selected. The findings reveal the extent of authorship collaboration, ranking of most productive authors, institution-wise productivity, and subject frontiers in speech and hearing literature.

A total of 155 papers published during 2010 to 2015 were analyzed and found that two author and three author papers claims a maximum score of 55 each representing 35.48 percent each. The year 2010 has produced a maximum of 34 papers representing 21.93 percent. Of the 450 authors, Sreedevi has contributed a total 14 papers representing 9.03 percent. She holds first position in five (35.71%) papers. AIISH has contributed maximum number of research output scoring 302 authors representing 67.11 percent. The discipline of 'Speech' is highly pronounced frontier of research scoring 51 (33.00%) papers. Thus collaborative research pattern in the field of speech and hearing is moving towards multiple authorship.

Keywords: *Speech and hearing, JAIISH, bibliometrics, authorship pattern*

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INTRODUCTION

Speech and hearing as a branch of knowledge deals with communication disorder, language disorder, and hearing disorder. The research literature produced in this field is relatively new as compared to other sciences. Some of it may be scattered in near related areas such as neurology, psychology, linguistics, special education etc. In order to help the researchers, libraries must try and identify the scattered literature which is of high value to the users. Bibliometrics is a well established tool to analyse the structure and characteristics of the literature produced in a subject. Thus purpose of bibliometrics is to determine the growth pattern of research output in a given discipline. It acts as a tool for finding out the indicators of scientific research growth in a subject/institution/in a country. It also helps in determining authorship collaboration and networking. In this research paper the main aim

was to identify ranking of most productive authors, institutions-wise productivity of the authors, and subject-wise distribution. Since that sample is taken from only one journal (Journal of All India Institute of Speech and Hearing [JAIISH]) the study does not cover ranking of periodicals. The findings of this study will provide insights for collection management and service in the library of All India Institute of Speech and Hearing (AIISH), Mysuru, Karnataka, India. A large number of previous studies in Library and Information Science research literature dealing with bibliometrics and scientometrics indicate the contributions of authors, ranking of journals and institutions-wise productivity etc., during certain period of time. Donohue [1] in one of his pioneer works on bibliometrics states that 'formal analytical and productive techniques have been developed for the study of subject literature'. He has also made pioneer

contributions to several aspects of bibliometrics such as (a) Bradford analysis, (b) epidemic analysis, (c) identification of research front, and (d) bibliographic coupling [2].

According to Price [3] ‘*Science grows at compound interest, multiplying by some fixed amount in equal periods of time (p.5)*’. Further he adds that ‘*Traditionally, scientific papers were authored by a single author. In modern science the concepts of two authors was gradually introduced. The sociology of science writing indicates that, research collaboration is the trend in scientific research enterprise*’. Bibliometrics and scientometrics are used to measure the growth of scientific literature and output of science in institutions in a country or between/across countries. Bibliometrics and scientometrics are also two closely related approaches to measure scientific publications and science [4]. Many studies carried out, indicated that there were variations in research output with regard to authors, institutions, subjects and journals. However, these indicators contribute to measure accurately the growth of scientific literature produced in a discipline. This paper is an attempt to find out the variations of research productivity in speech and hearing literature for a period of six years (2010–2015).

REVIEW OF LITERATURE

There are several studies previously published on the subject of bibliometrics and scientometrics. These studies are prolific in nature and extremely scattered over, from Agriculture to Zoology. Some useful studies cited in the paper are those which acted like the inspiration and guiding light are presented here. One of the studies carried in the year 1986 by Lalitha and Khaiser was about authorship collaboration in agriculture sciences. The authors have quoted Price [3] and disproved his statement that “*authors responsible for a research paper are increasing and that... if the trend holds...we shall move steadily towards infinity of authors per paper*”. Sin [5] was of the view that international authorship collaboration is common in many disciplines. He proposed ‘geographies of invisible colleagues’ and a ‘geographic scope effect’ similar to Merton’s Matthew effect. The study carried out by Hole *et al.* [6] on bibliometrics of ‘Drugs’ stated that International research

cooperation seem to promote publications in high Impact Factor journals. Gazni *et al.* [7] were of the view that international collaboration was the hallmark of scientific research. Garg and Anjana [8] opined that the single author papers were decreasing in the subject of IPR. Rao *et al.* have examined the growth pattern of research output; authorship pattern; institutional productivity and geographical distribution in the field of ‘Propulsion and power’. Ramkumar *et al.* [9] said that there was a distinct tilt towards multiple authorship in the field of ‘Speech and hearing’. Lorenzo *et al.* [10] were of the view that there was a gradual increase in scientific productivity in ‘Asperger syndrome’ research literature. Kolle and Thyavanahalli [11] argued that there was rapid increase in research publications in the field of ‘Air Pollution’. Akhavan *et al.* [12] have worked on the research literature in the field of ‘Knowledge Management’. Huang *et al.* [13] have carried out a systematic study on bibliometric using free academic databases such as PubMed, Scopus, and Web of Science, to assess the characteristics of research in rehabilitation using virtual reality technology. Asghar *et al.* [14] presented an overview of recent research activities in Assistive Technology (AT) for people with ‘Dementia’, using bibliometrics. Zhu and Hua [15] have conducted a study on research output in ‘Sustainable development’, which has contributed significantly in identifying promising frontiers in the area of sustainable development [16].

OBJECTIVES

Main objective of the present study was to bring forth the research trend in the field of speech and hearing. An attempt was made here to identify:

- Authorship collaboration;
- Year-wise distribution of multiple authorship;
- Ranking of most productive authors;
- Institutions-wise research productivity of authors;
- Subject-wise distribution in speech and hearing.

SOURCE JOURNAL

The present study was based on the research papers taken from the Journal of All India Institute of Speech and Hearing (ISSN 0973-

662X). JAIISH publishes research papers in speech, language and hearing and related areas. This would include original articles on assessment, diagnosis, and management of speech, language and hearing disorders [17].

Required data for the study were collected from this journal covering a period starting from 2010 to 2015. A total number of 155 research papers were available [18].

ANALYSIS AND INTERPRETATION

The analysis of research literature collected from JAIISH is presented as follows:

Distribution of Authorship Collaboration

The original purpose of publishing a research paper by the scientists was to communicate the novelty of the research to his peers and colleagues. This helped in seeking priority and recognition over others in the field. In the olden days, the authors generally maintained a network of personal correspondence between active scientists. The original purpose of communication of science was a social one, rather than scholarly. Eventually, when the number of journals and contributors to research increased, the single authorship papers started gradually diminishing and gave rise to multiple authorship and collaborative research papers. In the present study, a score of 155 papers published during 2010–2015 were analyzed to examine the multiple authorship patterns in speech and hearing research literature. It may be seen from Table 1, that two author and three author papers claimed a maximum score of 55 each

representing 35.48% each. The next highest score was 32 (20.64%) papers written by four authors; this was followed by five and more author papers representing 8 (5.16%) papers. Lastly, solo author papers account only 5 with 3.22 per cent (Fig. 1) [19].

Table 1: Authorship Collaboration.

S/N	Authorship	No. of papers
1	Single author	5 (3.22)
2	Two authors	55 (35.48)
3	Three authors	55 (35.48)
4	Four authors	32 (20.64)
5	Five and more authors	8 (5.16)
6	Total	155

Figures in parenthesis indicate percentages.

Year-wise Distribution of Multiple Authorship Papers

Year-wise distribution of multiple authorship papers is shown in Table 2. It may be seen from the table that a maximum number of research papers published were during the year 2010 scoring 34 representing 21.93 percent; followed by the papers of the year 2013 abounding 31 and scoring 20 percent. Further, examination revealed that the equal number of papers scoring 28 (18.06%), were published in the year 2011 and 2012 with an even percentage of 18.06 percent each; the years 2014 and 2015 score similarly the equal number of papers measuring 17 and representing 10.96 percent each [20].

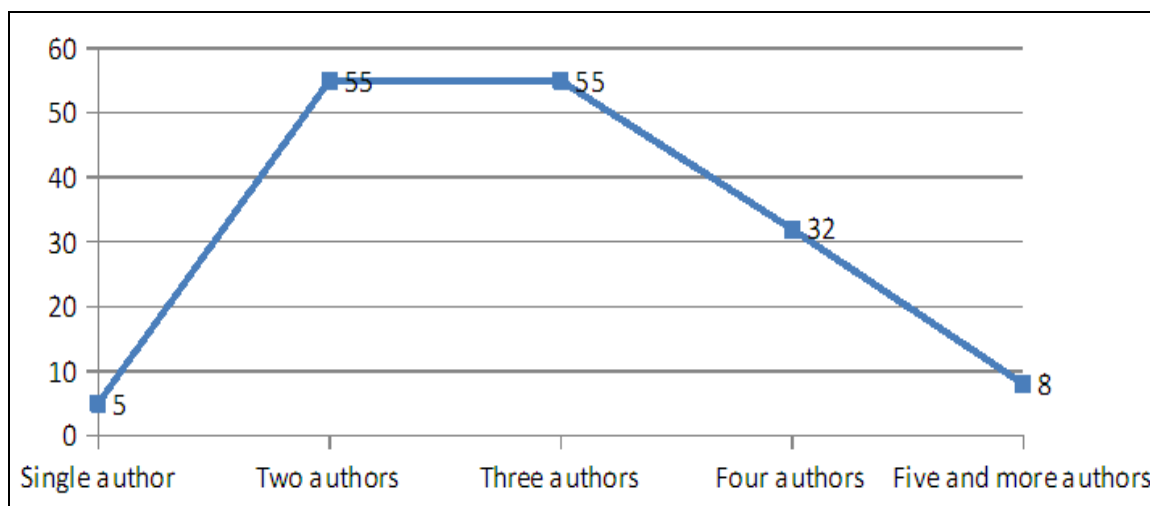


Fig. 1: Authorship Collaboration.

Further, Table 2 also highlights the year-wise and authorship-wise pattern in speech and hearing research literature. It may be observed from the table that two and three author papers were equal in number scoring 55 papers each. The year-wise analysis of these research papers shows that highest number of papers scoring 16 (29.09%) in the year 2013 were two author papers; followed by 10 (18.18%) papers each of two authors in the year 2010 and 2012. A similar trend was seen in the case of three author papers where the year 2010 attracted highest number of papers scoring 12 representing 21.81 percent [21].

The year-wise author-wise analysis indicated that, in the case of single author papers, the year 2012 and 2015 have a maximum number of papers scoring two papers each, representing 40 percent each. The year 2011 had the remaining 20 percent papers. As far as two author papers was concerned, the year 2013 has a maximum of 16 papers representing 29.09 percent. This was followed by the papers published in the year 2010 (10; 18.18%) and 2012 (10; 18.18%). The year 2014 has seven papers representing 12.72 percent and the year 2015 has only five papers of two authors representing 9.09 percent. With regards to three author papers the year 2010 has 12 research papers representing 21.81 percent; followed by the year 2012 which has 11 papers representing 20 percent. The year 2013 has nine papers representing 16.36 percent. Lastly, the 2014 and 2015 have equal number of papers (seven each) representing 12.72 percent each.

In the case of four author papers, the year 2010 has 11 research papers representing 34.37 percent, followed by the year 2011 with 10 research papers representing 31.25 percent. The year 2013 has five papers each written by four author papers representing 15.62 percent; whereas the years 2014 and 2015 have one research paper each written by four authors representing 3.12 percent each.

There were totally eight research papers written by more than five authors. The year 2010; 2011; 2012 had one paper each with 12.50 percent; whereas the years 2014, 2015 had two research papers each written by five and more authors representing 25 percent each.

Distribution of Position and Ranking of Authorship of the Most Productive Authors

The distribution of position and ranking of authorship collaboration among most productive authors is shown in Table 3. It may be seen from the table that there were 155 papers written by 450 authors in the field of speech and hearing. Of the 450 authors, only those authors who have contributed a minimum of five papers during six years were listed. Sreedevi has contributed a total of 14 (9.03%) papers (2010–2015); whereas her position in collaboration was concerned, she holds first position in five (35.71%) papers. In another five papers she holds the second position with 35.71 percent; in the remaining four papers, she represents the third position among her collaborators [22].

Table 2: Year-wise Distribution of Multiple Authorship Papers.

S/N	Year	Single author	Two authors	Three authors	Four authors	Five and more authors	Total
1	2010	0	10 (18.18)	12 (21.81)	11 (34.37)	1 (12.50)	34 (21.93)
2	2011	1 (20.00)	7 (12.72)	9 (16.36)	10 (31.25)	1 (12.50)	28 (18.06)
3	2012	2 (40.00)	10 (18.18)	11 (20.00)	4 (12.50)	1 (12.50)	28 (18.06)
4	2013	0	16 (29.09)	9 (16.36)	5 (15.62)	1 (12.50)	31 (20.00)
5	2014	0	7 (12.72)	7 (12.72)	1 (3.12)	2 (25.00)	17 (10.96)
6	2015	2 (40.00)	5 (9.09)	7 (12.72)	1 (3.12)	2 (25.00)	17 (10.96)
7	Total	5	55	55	32	8	155

Figures in parenthesis indicate percentages.

The second ranking author was Goswami, contributing 12 papers representing 7.74 percent. As in the case of Sreedevi, Goswami has first position in four (33.33%) papers; in about seven papers he claimed the second position with 58.33 percent; and in only one (8.33) paper he has third place.

Third in the rank of authors was Pushpavathi, having 11 (7.09%) papers produced during the period of six years (2010–2015). In the case of five (45.45%) papers, she has second place. In the remaining six (54.54) papers she represented third position.

Shyamala has a sum of nine (5.80%) papers during six years of the study (2010–2015). She claimed the first position in one paper with 11.11 percent. In the case of five papers, she claimed second place with 55.55 percent. She has the third position in one (11.11%) paper; her position was fourth in the case of only two (22.22%) papers [23].

Swapna ranks fifth among the most productive authors. She enjoyed first place in one (12.5%) paper. Her claim was second in case of another one paper with 12.5 percent. Her position was third in three papers with 37.5 percent. In the remaining three papers, her position was fourth with 37.5 percent.

Manjula was the sixth most productive author in the study. She enjoyed a second and third place in three papers each with 42.85 percent each, during the six year period (2010–2015). Her position was fourth in the case of only one (14.28%) paper.

Geetha has a total of six (3.87%) papers during the six year period (2010–2015), ranking seventh among the most productive authors. She enjoyed first place in one (16.66%) paper. Second place in two (33.33%) papers; in only one (16.16%) paper, she was positioned fourth among her collaborators.

Along with Geetha, there were two more authors viz., Rao and Pebbili, who shared the seventh rank with six papers each with 3.87 percent each. Rao has produced three single author papers enjoying the solo position with 50 percent. In the case of one (16.66%) paper she enjoyed second

place; in the remaining two (33.33%) papers she claimed the third position.

Pebbili has one (16.66%) solo paper enjoying the first position. In the case of four (66.66%) papers, he has the second position among his collaborators. In the case of only one (16.66 percent) paper, his position was third.

Savithri and Hema shared eighth rank among the most productive authors during six year period of study (2010–2015) with a total of five papers each with 3.22 percent. Savithri has three (60 percent) solo papers enjoying the solo position. In two papers representing 40 percent, she claimed second place between her collaborators. There is a similar pattern in the case of Hema, holding a solo position in three (60%) papers and second place in two papers with 40 percent [24].

Institutions-wise Research Productivity of Authors

The institution-wise research productivity of authors is shown in Table 4. It may be seen from that the top-level institutes and universities were ranked based on the research productivity of the authors. All India Institute of Speech and Hearing (AIISH), Mysuru, India was ranked first with 302 authors representing 67.11 percent. This was followed by JSS Institute of Speech and Hearing, Mysuru, India with 19 authors representing 4.22 percent. Dr. S. R. Chandrashekhara Institute of Speech and Hearing, Bangalore, India ranked third with 15 authors representing 3.33 percent. Manipal College of Allied Health Science, Manipal, India ranked fourth with 14 authors representing 3.11 percent. Ali Yavar Jung National Institute for the Hearing Handicapped, Mumbai, India was fifth in the list with 12 (2.66%) authors. Dr. M. V. Shetty College of Speech and Hearing, Mangalore, India was ranked sixth with 11 authors representing 2.44 percent. Helen Keller's Institute of Research and Rehabilitation for the Disabled Children, Secunderabad, India ranked seventh with 10 (2.22%) author papers. Sri Ramachandra University (SRU), Chennai, India was ranked eighth with seven (1.55%) author papers. Kasturba Medical College, Mangalore, India ranked ninth with six (1.33%) authors; Bharti Vidyapeeth Deemed University, Pune, India ranked tenth with four (0.88%) authors (Fig. 2).

Table 3: Distribution of Position and Ranking of Authorship of the Most Productive Authors.

S/N	Rank	Author	First author	Second author	Third author	Fourth author	Five author	Total
1	1	Sreedevi N.	5 (35.71)	5 (35.71)	4 (28.57)	-	-	14 (9.03)
2	2	Goswami SP.	4 (33.33)	7 (58.33)	1 (8.33)	-	-	12 (7.74)
3	3	Pushphavathi M.		5 (45.45)	6 (54.54)	-	-	11 (7.09)
4	4	Shyamala KC	1 (11.11)	5 (55.55)	1 (11.11)	2 (22.22)	-	9 (5.80)
5	5	Swapna N	1 (12.5)	1 (12.5)	3 (37.5)	3 (37.5)	-	8 (5.16)
6	6	Manjula R.		3 (42.85)	3 (42.85)	1 (14.28)	-	7 (4.51)
7	7	Geetha YV.	1 (16.66)	2 (33.33)	2 (33.33)	1 (16.66)	-	6 (3.87)
8	7	Prema Rao KS.	3 (50.00)	1 (16.66)	2 (33.33)	-	-	6 (3.87)
9	7	Gopi Kishore Pebbili	1 (16.66)	4 (66.66)	1 (16.66)	-	-	6 (3.87)
10	8	Savithri SR.	3 (60.00)	2 (40.00)	-	-	-	5 (3.22)
11	8	Hema N.	3 (60.00)	2 (40.00)	-	-	-	5 (3.22)
12		Total						89
13		Less than five authors paper						66
14		Grand Total						155

Figures in parenthesis indicate percentages.

Table 4: Institutions-wise Research Productivity Authors.

S/N	Rank	Name of the institution	No. of authors
1	1	All India Institute of Speech and Hearing (AIISH), Mysore, Karnataka, India	302 (67.11)
2	2	JSS Institute of Speech and Hearing, Mysore, Karnataka, India	19 (4.22)
3	3	Dr. S. R. Chandrashekhar Institute of Speech and Hearing, Bangalore, Karnataka, India	15 (3.33)
4	4	Manipal College of Allied Health Science, Manipal, Karnataka, India	14 (3.11)
5	5	Ali Yavar Jung National Institute for the Hearing Handicapped, Mumbai, Karnataka, India	12 (2.66)
6	6	Dr. M.V. Shetty College of Speech and Hearing, Mangalore, Karnataka, India	11 (2.44)
7	7	Helen Keller's Institute of Research and Rehabilitation for the Disabled Children, Secunderabad, Telangana, India	10 (2.22)
8	8	Sri Ramachandra University (SRU), Chennai, Tamil Nadu, India	7 (1.55)
9	9	Kasturba Medical College, Mangalore, Karnataka, India	6 (1.33)
10	10	Bharti Vidyapeeth Deemed University, Pune, India	4 (0.88)
11		Total	400
12		Institutional producing less than five years	50
13		Grand Total	450

Figures in parenthesis indicate percentages.

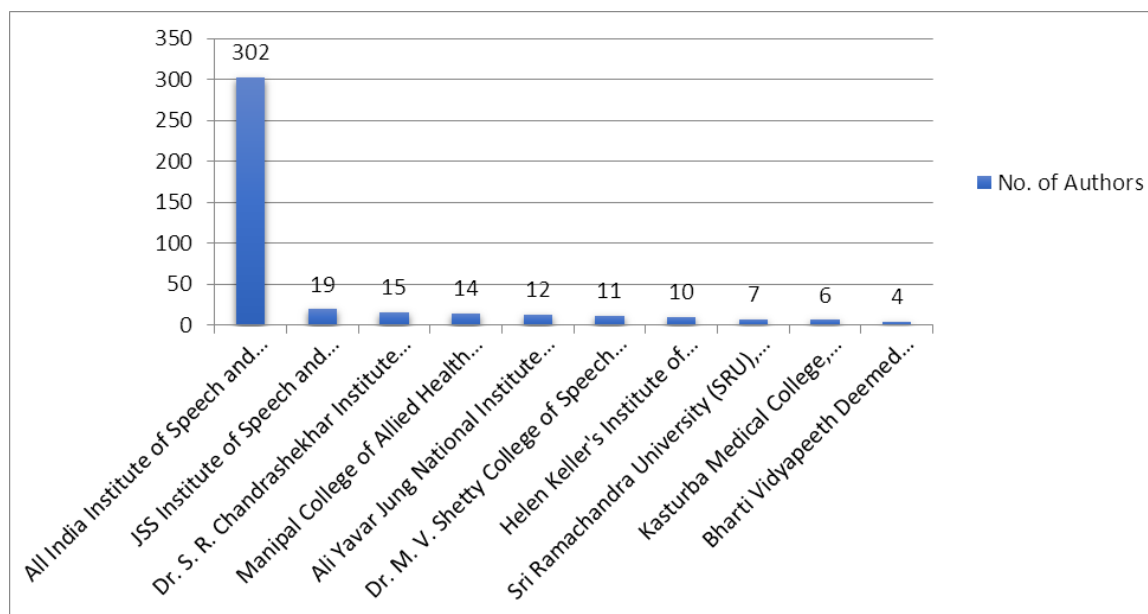


Fig. 2: Institutions-wise Research Productivity.

Subject-wise Distribution of Research Papers

The discipline of speech and hearing consists of several branches such as speech; language; hearing; communication etc., the subject-wise distribution of research papers is shown in Table 5. It may be seen from that 51 (32.90%) papers were published in the field of ‘Speech’ alone. This was followed by ‘Language’ scoring 45 papers representing 29.03 percent. The branch of ‘Hearing’ abounds 30 papers with 19.35 percent. The branch ‘Speech and language’ attracts 22 papers with 14.19 percent. There were only two papers in the field of ‘Communication’ representing 1.30 percent (Fig. 2).

Table 5: Subject-wise Distribution of Research Papers.

S/N	Subjects	No. of papers
1	Speech	51 (33.00)
2	Language	45 (29.00)
3	Hearing	30 (20.00)
4	Speech and Language	22 (14.00)
5	Communication	02 (1.00)
6	Others (Survey’s, Care Reports etc.)	05 (3.00)
7	Total	155

Figures in parenthesis indicate percentages.

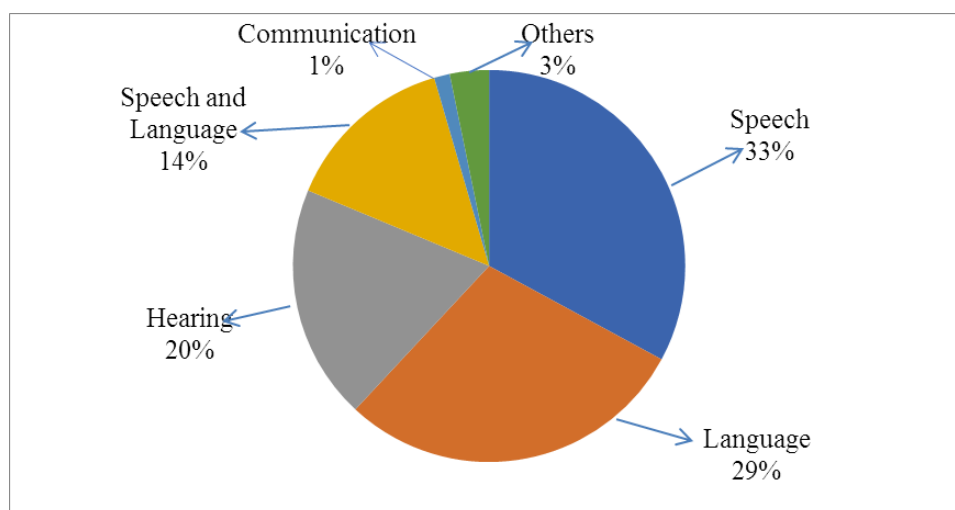


Fig. 3: Subject-wise Distribution of Research Papers.

CONCLUSION

There are very few studies on research productivity and author collaboration in the field of speech and hearing. All India Institute of Speech and Hearing is a fifty year old institute and one of its kinds in India. It is fully supported by the Ministry of Health and Family Welfare, Government of India, India. The investigators carried out the study using bibliometrics as a research tool. The sample data were collected from one and only one research journal of AIISH viz 'Journal of All India Institute of Speech and Hearing (JAIISH)'. It is one of the leading scholarly peer-reviewed journal in the field of speech and hearing in India. The scope of the study was limited only to the research papers published in JAIISH, from 2010 to 2015. A total of 155 papers contributed by 450 authors was the sample. The result of the study indicated that there are bibliometric and scientometric patterns similar to other subjects.

REFERENCES

1. Donohue JC. *Understanding scientific literature: A bibliometric approach*. Cambridge: MIT Press; 1973.
2. Donohue JC. A bibliometric analysis of certain information science literature. *Journal of the Association for Information Science and Technology*. 1972; 23: 313–17p.
3. Price, de Solla DJ. *Little science, big science—and beyond*. New York: Columbia University Press; 1963.
4. Meyer ET. What is bibliometrics and scientometrics? *TIDSR: Toolkit for the Impact of Digitised Scholarly Resources* [Internet]; 2013. Available from: <http://microsites.oii.ox.ac.uk/tidsr/kb/48/what-bibliometrics-and-scientometrics> (Accessed on 2017 Apr 2).
5. Sin SCJ. International coauthorship and citation impact: A bibliometric study of six LIS journals, 1980–2008. *Journal of the Association for Information Science and Technology*. 2011; 62 (9): 1770–83p.
6. Hole OP, Winther FO, Cederkvist HR, et al. A bibliometric analysis of the clinical development of drugs in Norway for the year 2000. *Health Information and Libraries Journal*. 2012; 30 (2): 149–54p.
7. Gazni A, Sugimoto CR, Didegah F. Mapping world scientific collaboration: Authors, institutions, and countries. *Journal of the Association for Information Science and Technology*. 2012; 63 (2): 323–35p.
8. Garg KC, Anjana AK. Journal of intellectual property rights: a bibliometric study. *DESIDOC Journal of Library & Information Technology*. 2014; 34 (1): 66–73p.
9. Ramkumar S, Narayanaswamy N, Savithri SR. Research productivity at the All India Institute of Speech & Hearing (AIISH): a scientometric study of journal publications. *International Journal of Health Sciences & Research*. 2015; 5 (12): 386–94p.
10. Lorenzo G, Lledo A, Pomares J, et al. Bibliometric indicators in the study of Asperger syndrome between 1990 and 2014. *Scientometrics*. 2016; 109 (1): 377–88p.
11. Reddy KS, Thyavanahalli SH. Global research on air pollution between 2005 and 2014: a bibliometric study. *Collection Building*. 2016; 35 (3): 84–92p.
12. Akhavan P, Ebrahim NA, Fetрати MA, et al. Major trends in knowledge management research: a bibliometric study. *Scientometrics*. 2016; 107 (3): 1249–64p.
13. Huang Y, Huang Q, Ali S, et al. Rehabilitation using virtual reality technology: a bibliometric analysis, 1996–2015. *Scientometrics*. 2016; 109 (3): 1547–59p.
14. Asghar I, Cang S, Yu H. Assistive technology for people with dementia: an overview and bibliometric study. *Health Information & Libraries Journal*. 2017; 34 (1): 5–19p.
15. Zhu J, Hua W. Visualizing the knowledge domain of sustainable development research between 1987 and 2015: a bibliometric analysis. *Scientometrics*. 2017; 110 (2): 893–914p.
16. Begum, Khaiser Jahan and Sharada, B. A. (1984) Journals most frequently cited by Indian linguistics: a citation analysis. *Annals of Library Science and Documentation*. 31 (3-4): 173-180.

17. Begum KJ, Shailaja TS. Characteristics of the literature used by the nutritionists: a citation study. *Annals of Library Science and Documentation*. 1985; 32 (3-4): 122–8p.
18. Begum KJ, Sami LK. Trends in Indian agricultural research: an analytical study. *Annals of Library Science and Documentation*. 1986; 33(4): 163–72p.
19. Begum KJ, Sami LK. Research collaboration in agricultural science. *International Library Review*. 1988; 20: 57–63p.
20. Lin AJ, Hsu CL, Chiang CH. Bibliometric study of Electronic Commerce Research in Information Systems & MIS Journals. *Scientometrics*. 2016; 109 (3): 1455–76p.
21. Meadows AJ. *Communication in Science*. Butterworth: Longman; 1974.
22. Rao KN, Sharma RK, Devi SG, *et al.* Bibliometric analysis of the journal of propulsion and power (1985-2013). *DESIDOC Journal of Library & Information Technology*. 2014; 34 (3): 271–6p.
23. Ramkumar S, Narayanasamy N, Rao PN. Collaboration trend in speech, language and hearing sciences: a scientometric study based on select journals. *IRA International Journal of Education and Multidisciplinary Studies*. 2016; 3 (3): 520–37p.
24. Subramanyam K, Stephens EM. Research collaboration and funding in biochemistry and chemical engineering. *International Forum on Information and Documentation*. 1982; 7 (4): 26–9p.

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