

# Publication trends of neurology articles in a biomedical journal from India

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## Abstract

**Background:** The details about the research productivity in the neurology specialty from India is lacking. We analyzed the publishing trends and the research productivity of neurology-related articles in the Journal of the Association of Physicians of India (JAPI). **Materials and Methods:** We carried the bibliometric analysis of articles related to neurology specialty from JAPI published between 2000 and 2011. Data were derived from the journal's website and the articles were analyzed for type (original article, case reports, etc.), disease (infection, vascular, etc.), place, and timelines for publication. **Results:** Out of total 2977 articles published, 256 articles belong to neurology. Neurology contributed to 7--20% of the published articles per year in JAPI. Case reports (52%) constitute the majority type of articles followed by Original Articles (20%), Correspondence and Images (15% each). Infections (27%), structural disorders (19%), cerebrovascular and peripheral nervous system disorders (16% each) contribute the majority of research articles in Neurology. Mumbai (15%), Delhi (13%), and Chennai (9%) are the top three contributors followed by Lucknow and Varanasi. All types of articles took about 9--10 months for acceptance and another 4--5 months for publication. Letters to the Editor were published faster when compared to other articles ( $P=0.0035$ ). **Conclusion:** Neurology specialty contributes an average 14% of articles per annum in JAPI. Infections, vascular, structural, and peripheral nervous system disorders together account for 80% of published literature with a small representation from other diseases. Mumbai and Delhi are the leading contributors toward research productivity in neurology.

## Key Words

Biomedical journals, India, neurology, publication trends, research productivity

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*Ann Indian Acad Neurol 2012;15:170-4*

## Introduction

Neurology as a subspecialty is one of the oldest branches to spin out from general medicine. Cerebrovascular disorders, meningoencephalitis, epilepsy, headache, and neurodegenerative disorders are the common diseases seen in neurological practice.<sup>[1]</sup> The specialization is expanding rapidly with new branches like neuroradiology and interventional neurology.<sup>[2]</sup> The neurology practice also grew simultaneously, with more number of institutes imparting formal training to the physicians. Patients with neurological ailments constitute a majority in the clinical practice. Most of them are treated as outdoor patients, while a few receive in-hospital therapy

depending on the severity and the need for intervention. Neurology as a specialty has contributed extensively to medical literature.<sup>[3]</sup> Research work in neurology is often difficult to undertake for the procedures involved and the duration of observation. However, the quality research work finds its way into one of the leading biomedical journals. The need to publish or perish is felt by most of the academicians and academic institutes in India.<sup>[4]</sup>

Disorders of neurology are initially handled by the primary care physicians and complicated cases reach the doors of the tertiary care centers. Hence, research productivity related to the neurology subspecialty is seen in both medicine and neurology journals. Association of Physicians of India (API) was formed in 1944 and has over 15,000 participants as its members.<sup>[5]</sup> The official journal of the association is called the Journal of Association of Physicians of India (JAPI). JAPI is published every month with a readership of over 250,000 and is extremely popular among the medical fraternity. The journal covers all the aspects of the medicine and various subspecialty subjects. The readership of JAPI includes primary care physicians and subspecialists of diverse specialties like cardiology, neurology,

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10.4103/0972-2327.99695

etc. There is no formal assessment of the published literature of neurology subspecialty in India. Hence, this work was carried out by the authors with the aim to analyze the nature and characteristics of neurology specialty articles published in JAPI.

## Materials and Methods

JAPI issues of the last 12 years (January 2000 to December 2011) available online were taken in analyzing the publication trends of articles related to neurological disorders in the journal. The data were derived from the website of the journal which gives links to previous issues.<sup>[6]</sup> The flow diagram of the study is given in Figure 1. Research work carried out by the individuals and institutions is presented usually as original articles.<sup>[7]</sup> However space constraints in a journal lead to publication of the same data in a concise form as correspondence (also known as Letters to Editor). Individual case reports and reporting an interesting image also constitute the early steps toward the research activities. Hence, the following types of articles were included in the final analysis regarding the research productivity pertaining to neurology in JAPI: Original Articles, Case Reports, Images, and Letters to Editor. The articles published were analyzed for type, subspecialty, and place of the institution from where the work originated.

The following articles were excluded from the analysis as they do not report data derived from original research: Editorials, Update articles, Review articles, Philately, Miscellaneous articles, Postgraduate Clinic, Guidelines, Announcements, Corrigendum. Correspondence pertaining to the published articles and comments unrelated to research work were also excluded from the analysis. Articles published in the special issues and topic supplements were excluded.

For the purpose of analysis the neurological disorders were subdivided into seven broad groups: group 1 (cerebrovascular disorders), group 2 (infectious diseases), group 3 (peripheral nervous system disorders), group 4 (structural anomalies and neuroradiology-related articles), group 5 (degenerative disorders), group 6 (epilepsy-related) and group 7

(demyelinating and miscellaneous disorders of the central nervous system). The institution of the first author is taken as the place and department of study for the articles involving multiple authors from different institutes and departments. The duration between initial submission and revision, time taken for acceptance, and publication is counted using the dates given in the article files. The first day of every month is taken as the date of publication of all articles given in that issue (for example 1 December 2010 is taken as the date of publication of the articles in the December 2010 issue). The data were obtained independently by both the authors and discrepancy if any was resolved by accessing the information jointly from the JAPI website.

## Statistical analysis

Summary data were presented as mean values  $\pm$  SD and comparison between groups was done by one-way ANOVA with Bonferroni's multiple comparison test. The data regarding the timelines were derived from the articles and days were calculated using DAYS360 formulas embed in Microsoft Excel (Microsoft, USA). *P* values were reported for all statistical tests and a value  $< 0.05$  was considered to be significant.

## Results

Over the past 12 years, JAPI published 12 volumes (volume numbers 48–59) with a total of 144 issues. A total of 10 issues were not considered as they published the proceedings of the APICON and the details about May 2005 issue were not available on the website. A total of 256 articles related to neurology were available for final analysis. The distribution of the types of articles is given in Figure 2. Case Reports (52%) constitute the major type of articles followed by Original Articles (20%), Correspondence, and Images (15% each). Neurology as a subspecialty contributed about 7–20% of articles published in JAPI. The total number of neurology-related articles and its share in JAPI are given in Figure 3. The number of articles per year is decreasing each year with a down-sloping trend line. However, the percentage line depicting neurology articles remained flat because of the overall decrease in the number of total published articles per year in JAPI. Maximum numbers of articles were seen in the years 2003 and 2004 with 20% contribution from neurology.

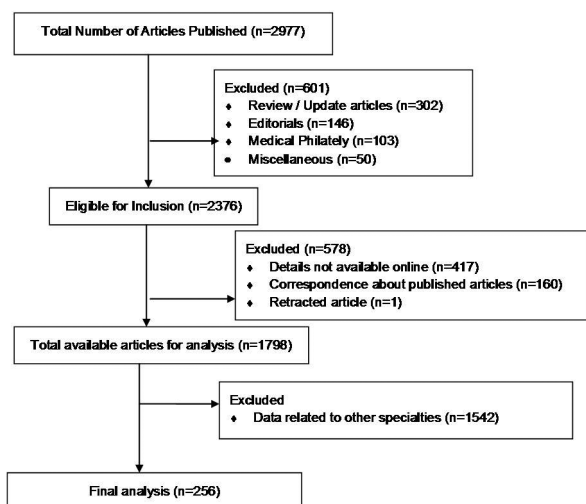


Figure 1: Flow diagram of the study

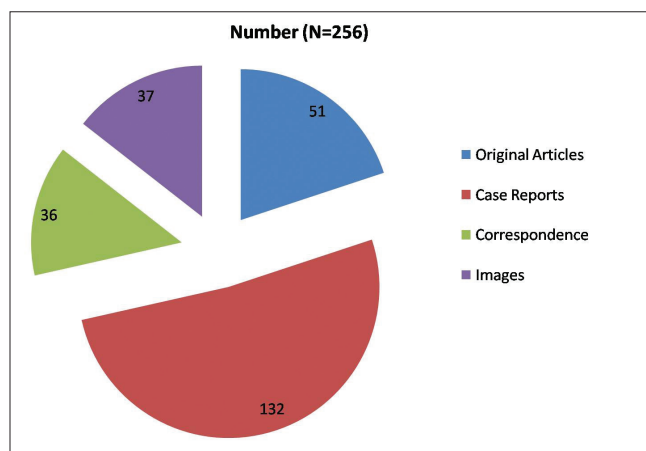


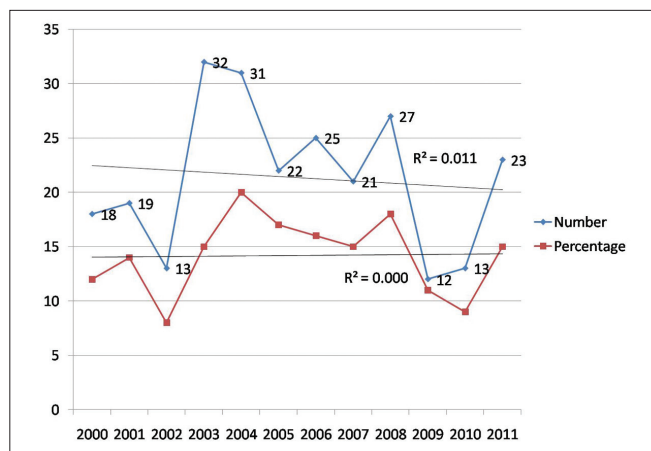
Figure 2: Distribution of neurology-related research articles in JAPI

Table 1 gives the details about the disease-wise distribution of the articles. Infections (27%), structural disorders (19%), cerebrovascular and peripheral nervous system disorders (16% each) contribute the majority of research articles in Neurology. Maximum Original Articles were seen from cerebrovascular disorders, epilepsy, and neurodegenerative disorders (30% each). Infectious disorders had contributed to research productivity in the form of Case Reports and Original Articles. Mumbai (15%), Delhi (13%), and Chennai (9%) are the top three contributors followed by Lucknow and Varanasi. The contributions from other cities of India remain a small percentage individually as shown in Figure 4. Only two publications related to neurology were submitted from foreign countries.

Table 2 gives the details about the timelines between submission and publication. The time taken from initial submission to acceptance varied between 9 and 10 months and another 4 and 5 months for publication. Hence, the average time taken by articles from submission to publication is about 13–15 months. Letters to the Editor were published faster after acceptance, when compared to other articles ( $P=0.0035$ ). There was no other significant difference between all types of articles regarding the prepublication timelines.

**Discussion**

In this study, we analyzed the publication trends of neurology-

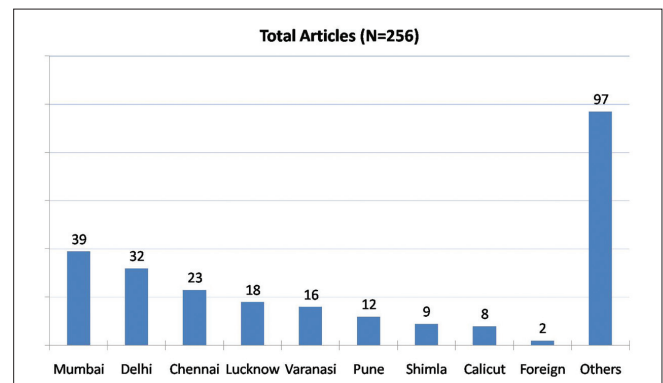


**Figure 3: Trends of neurology-related publications over the last decade**

related research articles in one of the most popular journals of India. The total number of articles related to neurology subspecialty published per volume varied between 7 and 20% over the past 12 years. The peak contribution was seen in the years 2003 and 2004. Case Reports take a major share of published articles when compared with Original Articles. This indicates that the specialty is contributing a number of articles in the form of Case Reports which are of interest to the physician community. Original Research Articles of the specialty are of more relevance in specialty-specific journals and not in general medical journals. Hence, the share of the Original Articles may be less in comparison to Case Reports.

The percentage contribution from the neurology specialty in JAPI remains static in the past decade. The explosive growth in neurology research otherwise did not reflect on the publication trends of JAPI.<sup>18</sup> This could be due to lack of original research and specialized nature of the studies being submitted to specialty journals rather than journals oriented toward general physicians. Neurology articles are seen more as Case Reports and Images. The trend is seen with most of the groups except in cases of epilepsy and neurodegenerative disorders. This is self-explanatory because the profiles of patients pertaining to these two disorders has no imaging characteristics and are more feasible to carry out original studies.

Neuroradiology is a latest specialty and is increasing rapidly with the advancement in the field of diagnostic imaging.<sup>19</sup> Case Reports and Pictorial Images are the major types of research articles pertaining to the field of neuroradiology. Infectious



**Figure 4: Research productivity from various cities in neurology**

**Table 1: Top diseases contributing to the research productivity in neurology**

Group	Disorder	Total (%)	Original article	Case reports	Correspondence	Images
1	Cerebrovascular disorders	41 (16)	12	21	3	5
2	Infectious diseases	69 (27)	12	38	13	6
3	Diseases of peripheral nervous system	48 (18.8)	9	27	8	4
4	Structural anomalies and neuroradiology	41 (16)	1	21	4	15
5	Degenerative disorders	24 (9.4)	8	9	3	4
6	Epilepsy demyelinating and miscellaneous diseases	21 (8.2)	7	9	4	1
7		12 (4.7)	2	7	1	2

**Table 2: Comparison of publication timelines between four types of articles**

		Original articles n=51	Case reports n=132	Letters n=36	Images n=37	P
Time from submission to acceptance	Days*	271.5 (187.8)	272.5 (220.2)	256.4 (239.9)	319.4 (272.3)	0.6391
Time from acceptance to publication	Days	134.2 (86.5)	133.1 (116.7)	65.7 (67.9)	102 (106.1)	0.0035
Time from submission to publication	Days	405.6 (180.8)	405.6 (214.1)	322.1 (247.1)	421.4 (246.1)	0.1744

\* Mean (SD)

disorders of the central nervous system (CNS) are rampant in our country with diseases like tuberculous meningitis, viral meningoencephalitis, and human immunodeficiency virus-related opportunistic infections.<sup>[10]</sup> Hence, it is not surprising to see that the research productivity of neurology is predominantly originated from the field of infectious disorders of the nervous system.

Cerebrovascular disorders are increasing in number with increased risk factors and constitute a major cause of morbidity and mortality in the elderly.<sup>[11]</sup> Though patients with epilepsy remain a large chunk of clientele in neurology department, the total research productivity of this field is less. This could be due to difficulties in carrying out clinically meaningful research activities in epilepsy. Thus the publication trends of neurology remain in line with the patient clientele seen in clinical practice.

Most of the contributions to the JAPI in the field of neurology have come from the three metros (Mumbai, Delhi, and Chennai). This is closely followed by Lucknow and Varanasi as shown in Figure 4. This is explained by the fact that corporate hospitals and academic institutes imparting medical education are located in these cities. Kolkata surprisingly did not feature in the top eight places regarding neurology-related research productivity. Similar distribution of places was seen in a recently published scientometric analysis of neuroscience research from India between 1999 and 2008.<sup>[12]</sup> The data from this paper show that the specialty had an average publication growth rate of 11.37%. India is ranked at the 21st position among the top 26 most productive countries in neurosciences with the USA and UK being the first and second respectively. AIIMS, NIMHANS, and PGIMER are the top three contributors in Indian neuroscience research work. Neurology India is the leading journal publishing Indian neurosciences research, followed by Eye and Journal of Clinical Neurosciences.<sup>[12]</sup> However the paper does not contain data regarding individual neurological disorders resulting in lack of comparable data from our paper. The practitioners and institutes from other cities have contributed sporadically with case studies and research articles. The contribution from foreign countries is miniscule in quantity (2 out of 256) and this could be due to poor visibility of the JAPI coupled with the lack of online submission facilities.<sup>[13,14]</sup>

The articles take an average time of more than a year from the date of submission to publication. The timelines are almost same for acceptance and publication between different types of articles as shown in Table 2. Letters to the Editor took less time for publication after acceptance when compared with other types of articles ( $P=0.0035$ ). We excluded letters regarding the published articles from our analysis as

mentioned earlier. Hence this indicates that research work presented in a concise form is likely to be published faster than in conventional form. This is due to requirement of the small space in the journal for letters when compared to other articles. Though we analyzed all the online available data in this study, exclusion of some articles for lack of details is a limitation of our study. Our data pertaining to neurology articles in JAPI may not reflect the overall neuroscience research output from India making this another limiting factor.

## Conclusions

Our analysis showed that neurology as a subspecialty contributed about 14% of articles in JAPI every year. Infections of the CNS and cerebrovascular disorders are the major fields of research productivity. Case reports are the major type of research articles with maximum contributions from metro cities.

## Acknowledgments

The authors sincerely acknowledge the technical and clerical help rendered by Hav Puran Dutt and Sep Gunjan Singh in conduct of this study.

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**How to cite this article:** Kumar KH, Aravinda K. Publication trends of neurology articles in a biomedical journal from India. *Ann Indian Acad Neurol* 2012;15:170-4.

**Received:** 27-12-11, **Revised:** 26-01-12, **Accepted:** 31-01-12

**Source of Support:** Nil, **Conflict of Interest:** Nil