

Overcoming the Initial Barriers to Publication and the Role of the Mentors?

3

Leaders become great, not because of their power, but because of their ability to empower others

—John Maxwell, American Author (1947–)

3.1 What Is India's Contribution to the World's Medical Publications?

Although India has 1.3 billion inhabitants, which is 17.7% of the world's population, it contributes only 1.6% of all the articles to the medical literature (1998–2008) [1, 2]. The top two countries with the largest number of scientific publications are the United States and China. The other countries that are at the top after they are the United Kingdom, Japan, and Germany (Fig. 3.1). There is, however, a large difference between the number of papers published by America and other top countries. Although India ranked among the top 20 countries based on the number of publications from 2008 to 2012 [2]. It produced much fewer papers than the world's leading nations.

3.2 Are the Numbers of Publications from India Increasing?

There are three large data systems that have studied the publications from India over the last 10 years [3–5]. These have been based on Scientometric analyses [3, 5], which aim to provide a quantitative characterization of scientific activity. Table 3.1 shows that although the total numbers of research papers have varied in the three studies (possibly because two different databases were used). Gupta et al. concluded that the annual publication growth rate had increased by 11.6% between 1999 (3930) and 2008 (10,381) [3].

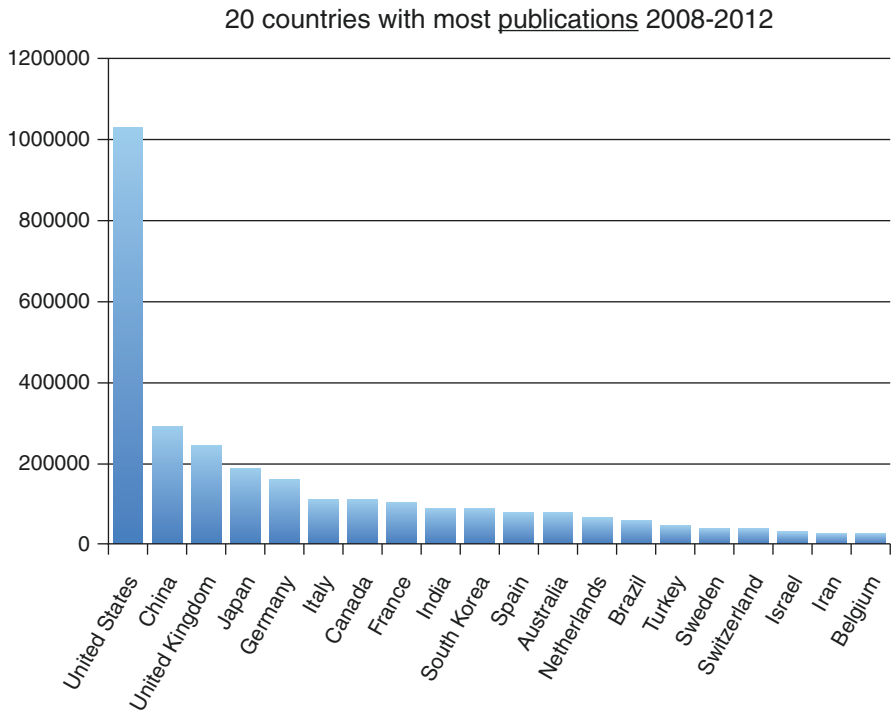


Fig. 3.1 Twenty countries with most publications (Reference for citation: Xu Q, Boggio A, Ballabeni A. Countries' Biomedical Publications and Attraction Scores. A PubMed-based assessment – Scientific Figure on Research Gate. F 1000 Research. 2015 H)

Table 3.1 Medical research output from India

Authors	Gupta et al. [3]	Ray et al. [4]	Chaman Sab et al. [5]
Date of paper	2011	2016	2018
Period studied	1999–2008	2005–2014	2005–2014
Number of publications	657,345	101,034	29,153
Database used	Scopus	Scopus	Web of Science
H index	97	–	71

3.3 Is Quantity or Quality More Important in Publications?

Although there is evidence that it is better to publish papers than not publish at all Indian scientists publish papers that are generally of a poor quality, i.e., they are not included in respected indexing systems and therefore rarely cited [3–5]. We need to upscale our research activities to investigate systematically the problems that occur in our own country rather than perform copycat investigations based on Western publications. However, this is not to say that we should shun Western collaboration

because there is much to learn from their experience and there is also evidence that such joint efforts receive more citations [6].



3.4 Should Faculty and Students from All Medical Colleges Publish Papers. Does this Not Detract from Patient Care and Teaching?

There is evidence to suggest that medical institutions which have done more research provide better patient care and by disseminating their knowledge attract the best students and faculty in a country [7]. Indeed the US experience seems to support this. During the early twentieth century, the state of American medical education was similar to what we have in India today. There were a large number of medical colleges producing substandard doctors. The Carnegie Foundation then sent Abraham Flexner to Germany and the UK where medical education standards were higher. Based on the influential 'Flexner report' of 1917 the number of medical colleges in the USA was drastically reduced and it was recommended that their research

output be assessed to be a surrogate marker of the quality of the training they were imparting [8]. More than one hundred years later this report still forms the basis of the American medical education system. Although it has been commented that ‘teacher and student chased each other down the fascinating road of research, forgetful of those wider interests to which a hospital must minister’ research and clinical care should fuse together for the better prosperity of patients as well as the institution [9].

According to a recent study published on the research output of 579 medical teaching institutions in India 57% had not published a single paper between 2005 and 2014, which was included in the Scopus indexing system. Four Indian medical colleges, i.e., the All India of Medical Sciences, New Delhi, the Post Graduate Institute for Medical Education and Research, Chandigarh, Christian Medical College, Vellore, and the Sanjay Gandhi Institute of Medical Sciences, Lucknow were responsible for a quarter of the total number. Only 25 institutions produced more than 100 papers per year and their contribution to overall publication output was 40.3% [4].

It has also been found that 88 medical colleges that received research grants from the Indian Council of Medical Research (ICMR) did not publish any papers at all. Only 10% of projects funded by the ICMR ended in the publication in indexed journals [10]. In 2002, in another study, the ICMR concluded that out of 158 medical colleges, 27 did not have any publication at all, and 29 had only one paper [1]. Clearly there is a large disparity in India, between the best medical institutions which produce some papers and the large majority which publish very little or nothing at all.

3.5 How Much Does the Private Sector Contribute Towards Research?

The private sector provides almost 80 percent of the outpatient and 60 percent of the inpatient care in India. It is also emerging as an alternate medical education hub with more than 470 private medical colleges all over the country. Unfortunately, the primary aim of most private institutions is to make money for their owners and shareholders through student fees and patients’ fees and therefore they do not invest in research that will eat into their profits. Yet despite this, there are some, mainly not-for-profit hospitals, which generate a reasonable number of publications (Fig. 3.2). The top three being the LV Prasad Eye Institute in Hyderabad (1202), Sir Ganga Ram Hospital in New Delhi (1067), and the PD Hinduja National Hospital in Mumbai (677) [4]. However all these institutions are very far behind similar ones in the USA like the Massachusetts General Hospital in Boston and the Mayo Clinic which over the same period produced 46,3011 and 37,633 papers respectively.

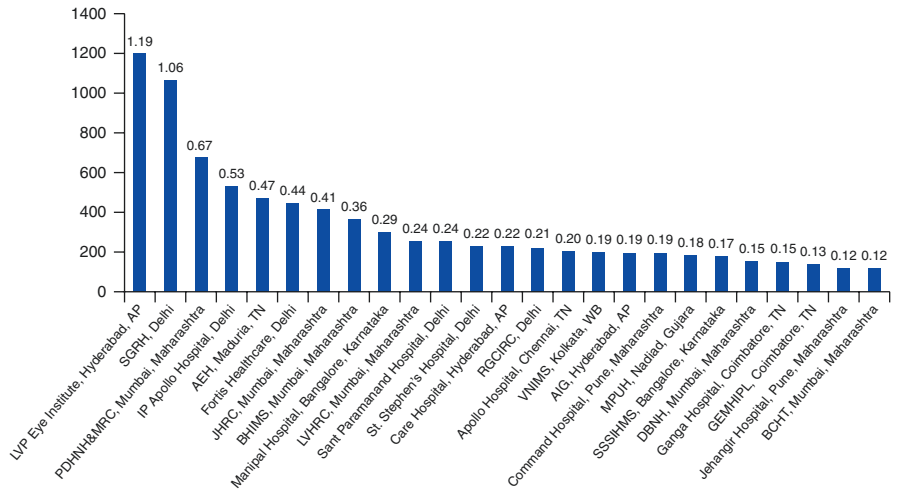


Fig. 3.2 Distribution of the number of publications by the hospitals from private sectors in India

3.6 Is the Recent Medical Council of India (MCI) Rule Linking Publications to Faculty Promotion the Main Reason for the Surge in Publication Numbers?

The MCI was established in 1956 with the main objective of maintaining uniform standards of medical education in India. These state that medical professors are the planners and builders of the future of students and have a fundamental role in shaping their careers [11, 12].

Many amendments in regard to the appointment and promotion of medical teachers have been declared under the ‘Minimum Qualifications for Teachers in Medical Institutions Regulations, 1998’ to its last version of ‘amendments up to June 8, 2017’. These consist of two main criteria, firstly teaching experience and then comes research publication. The second criterion is regarded to be the passport for an eventual professorship.

According to a circular in 2015, a medical teacher should possess certain requirements in regard to his or her publications, i.e., to be either the first or second author (later amended to the corresponding author) in a publication in journals that are included in six indexing agencies—Scopus, PubMed, Medline, Embase/Excerpta Medica, Index Medicus, and Index Copernicus. The circular also states that only original research papers would be considered.

A Professor should have published 4 papers, an Associate Professor 3, and an Assistant Professor 2 papers.

3.7 Can We Expect India's Unique Health Issues to Be Solved By the Developed World?

There are many health problems which are largely 'Indian'. These include the big five communicable diseases like tuberculosis, malaria, diarrhoeal diseases (including cholera), AIDS, and acute respiratory infections. Among the non-communicable disease that are now common and increasing in prevalence are diabetes, cancer, cardiovascular diseases, and blindness. There are some diseases that are also largely unique to our region like leprosy, filariasis, sanitation-induced illness, Kyasanur Forest disease, and Nipah virus infection. Among the non-communicable diseases, cancers and diabetes occur at a younger age than in Western populations. For all these local problems, we need local solutions which is only possible if we do research [12–15].

Unfortunately, many of the solutions to our health problems have been found by expatriates working here or in laboratories abroad. Some examples of expatriates as well as Indians working in India, contributing to landmark research are as shown in Table 3.2

3.8 What Are the Various Barriers to Quality Publication Output from India?

There are several reasons proffered for our low research output which are considered to be barriers. They include [1, 12]:

- Lack of time
- Lack of financial support
- Lack of attitude and aptitude
- Lack of a team to support research
- The perception that research is a 'fancy' activity and an unnecessary waste of time
- Lack of adequate training in research methodology

3.9 How Can a Clinician Take Out Time from His/Her Schedule for Publication?

The two important responsibilities for a physician are patient care and teaching. The former takes up most of a doctor's time. In addition, there are administrative responsibilities that are given to him or her from the institute. Thus for him to take out time for research he needs to cut down from his 'leisure' time. Dedication and interest are a must for this commitment [1, 4].

Table 3.2 Major contributors to landmark Indian research (India and overseas)

<i>Expatriates working in India</i>	
1. Folly TLF (1798)	The medical skills of the Malabar doctors in Tranquebar, India (1798)
2. McCarrison, Major General Sir Robert (1878–1960)	Nutrition, goitre, cretinism, Nutrition Research Laboratory
3. Ross, Ronald (1857–1932)	20 August 1927, Secunderabad, Ross made the landmark discovery of transmission of malaria by the Anopheles mosquito; Nobel prize in Medicine in 1902
4. Esdaile, James (1831)	The ‘Apostle of Mesmerism in India’
5. Fayrer, Sir Joseph (1824–1907)	Treatment of snakebite, in India. Physiological effects of the venom of poisonous snakes (Thanatophobia of India, 1872)
6. O’Shaughnessy, Dr. William Brooke (1809–1889)	Modernized treatment of cholera, introduced cannabis to Western medicine, laid the first telegraph system in Asia
7. Russell Dr. Patrick (1727–1805)	<i>The Natural History of Indian Serpents</i>
8. Annesley-James (1828)	<i>Diseases of India</i> vols. 1,2; Cholera and other tropical diseases. 1828
9. Carter, Henry Vandyke (1831–1897)	Drawings for the famous textbook <i>Gray’s Anatomy</i> . Work on leprosy, actinomycosis, relapsing fever etc.
10. Swain, Clara A (1912)	First medical missionary to the women of the orient
11. Brand, Paul (1914–2003)	Surgery for the reconstruction of hands damaged by leprosy
12. Scudder, Ida (1870–1960)	Founded the Christian Medical College and Hospital. Saved lives of countless women who might have died during labour
<i>Indians working in India</i>	
1. Furdoonji, Dr (Miss) Rupa Bai (1885)	World’s first qualified lady anaesthetist
2. Nath, Indira (1938)	Indian immunologist. Mechanisms underlying immune unresponsiveness in man, reactions, and nerve damage in leprosy
3. Brahmachari, Rai Bahadur Sir Upendranath (1873–1946)	Synthesized Urea-Styibamine in 1922; effective treatment for Kala-azar
4. De, Sambhunath (1915–1985)	Discovered the cholera toxin; successfully demonstrated the method of transmission of <i>Vibrio cholera</i>
5. Bose, Jagdish Chandra (1858–1937)	Plant neurobiology
6. Chopra, Ramnath (1882–1973)	Indian pharmacopoeia. Books include ‘Indigenous drugs of India’, ‘Glossary of medicinal plants of India’, and ‘Poisonous plants of India’
7. Venkataswamy, Govindappa (1918–2006)	Aravind eye hospital
8. Sethi PK (1927–2008)	Jaipur foot
9. Bawaskar, Himmat (1983)	Scorpion, snake bites, medicine in rural India
10. Chatterjee, Asima (1917–2006)	Periwinkle derived alkaloids having anti-cancer properties
11. Vaidya, Vidita (2000)	Neurophysiology and stress-associated psychopathology
12. Mukerji, Mitali (1967)	Human genomics and personalized medicine
13. Mukhopadhyay, Subhash (1931–1981)	India’s first test-tube baby in 1978

Suggested by Dr. Sunil Pandya, Neurosurgeon, Mumbai

3.10 Do Our Institutes Lack the Infrastructure for Research and Publication?

Some research requires dedicated space, computers, Wi-Fi connections, manpower in terms of artwork specialists, statisticians, and reliable Internet access to medical journals and all these facilities are not present in many Indian medical institutions. However, there are examples of many major discoveries that have been made by enthusiasts in poor countries in the absence of adequate infrastructure. These include Dr Dennis Burkitt who described lymphoma in Uganda. Thus, proving the point that ‘wherever there is a will there is a way’. Other discoveries that have helped developing countries, in particular, are using blue light to treat neonatal jaundice, praziquantel to treat schistosomiasis, the hepatitis B vaccine, a rapid malaria test for diagnosis, and the female condom.

3.11 Do We Need Finances to Start Writing for Publication?

Once there is a will very little financial support is necessary to publish papers and although some open access and ‘predatory’ journals have started charging large sums for this. They are best avoided. In other instances publication fees for open access in leading journals can be supported by funding bodies or research grants.

Clinical trials or laboratory-based research require manpower and reagents that are the main source of expenditure. If the research proposal is promising, one can apply for funding from the ICMR, Department of Biotechnology, the Department of Science and Technology in India, or even the National Institutes of Health in the USA and many other sources both here and abroad.

3.12 Do We Have an Attitude Towards or an Aptitude for Research?

Attitude is an option or behaviour about research whereas aptitude is a flair for it. Whereas the former can be acquired the latter is natural. Workshops and incentives can help in changing the behaviour of doctors for publication as is being demonstrated in China.

3.13 What Is the Role of a Mentor in Publication?

A mentor is a teacher who can help students to understand research methodology and do hand-holding and act as a role model during the initial phase of projects. There is, however, a shortage of these individuals in most developing countries [16, 17]. It has been suggested that our medical education should be research oriented, we should strive to improve the quality of medical faculty in colleges, try to decrease load of patients so that adequate care can be given. Besides this hand-holding by

premier research institutes to upscale the research activities in medical college is also recommended [18, 19].



The best tips for improving our research output are:

- Educating students on the benefits of research.
- Providing incentives in the form of financial rewards for publication.
- Encouraging students to network with other researchers.
- Holding frequent, well-publicized regular research meetings and updates.
- Conducting medical writing and editing workshops.
- Encouraging students to attend scientific conferences and learn how the mentors present.
- Regarding our Medical Records as a source of treasure.
- Balancing the faculty's clinical and research commitments.

3.14 Conclusions

- There are many barriers preventing initial publication which include a lack of time, lack of infrastructure, and the lack of attitude for research.
- Despite all the bottlenecks, India still figures in the top 20 countries according to its research output.
- A mentor is a person who can handhold for the initial publication and shows the road forwards.
- Both attitude and aptitude need to be developed for doing research.

- We have a large number of patients for undertaking research and our spectrum of disease is different from that seen in the West. For local problems, we need local solutions which can only be done if we do research.

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