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Original Article

The research output from Indian medical institutions between 2005 and 2014

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ABSTRACT

Background: The research output from Indian medical institutions is generally regarded to be poor but there have been no previous studies to document this especially after the recent proliferation of 263 medical colleges, mainly in the private sector and under the aegis of the National Board of Examinations, as well as the 316, mainly public sector, colleges under the Medical Council of India.

Methods: Using the SCOPUS database we analyzed the research output from 579 Indian medical institutions and hospitals between 2005 and 2014, including the contributions of individual states and compared the output of Indian medical institutions with some of the leading academic centers in the world.

Results: Only 25 (4.3%) of the institutions produced more than 100 papers a year but their contribution was 40.3% of the country's total research output. 332 (57.3%) of the medical colleges did not have a single publication during this period. The states which had the largest number of private medical colleges fared the worst with more than 90% of the medical colleges in Karnataka and Kerala having no publication at all. In comparison, the annual research output of the Massachusetts General Hospital was 4600 and the Mayo Clinic 3700.

Conclusion: The overall research output from Indian medical institutions is poor. This may be because medical education has now become a business and there is little interest in research which is not thought to be a profitable activity. We believe that a drastic overhaul of Indian medical education is necessary similar to that initiated by Flexner in the USA in the beginning of the last century.

1. Background

Assuring a minimal level of healthcare to the expanding population of India has become a major issue over the last decade. Although there has been an overall improvement of medical resources and healthcare since independence, the distribution of these has been very uneven, with the rich having access to a burgeoning and unregulated private sector dominated by the corporate, for-profit hospitals and the poor

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left to go to underfunded, overcrowded, and inefficient public institutions.[1] There is a shortage of doctors in public hospitals and in rural areas because most of them choose to join the private sector or work in the cities.[2]

In an attempt to increase the number of doctors in India, the government has enhanced the number of seats in existing medical colleges and liberally allowed the creation of new medical institutions financed both by public, but mainly private funds.[3] However, this policy has not been an unqualified success with what is generally perceived to be a fall in the standards of medical education, which has now become a business venture for many politicians and is accompanied by widespread corruption both in its entry and exit processes.[4,5]

The primary authority controlling medical education standards in this country is the Medical Council of India (MCI), which was first established in 1934 under the Indian Medical Council Act, 1933. Currently, there are around 316 institutions all over the country that have been recognized by the MCI.[6]

The other body that controls postgraduate medical education, mainly in the private sector, is the National Board of Examinations (NBE). This was set up in 1975 when the General Medical Council in the United Kingdom derecognized Indian medical qualifications because of their varying standards.[7] Mrs. Indira Gandhi, the then Prime Minister, in retaliation, derecognized British qualifications and set up the NBE, an autonomous body under the Ministry of Health, to regulate and oversee postgraduate medical education and the examinations in India in institutions that were outside the ambit of the MCI, as well as to assess foreign qualifications.[8] The NBE now conducts the largest portfolio of examinations in medicine in India, and during 2014, it held them for 150,000 medical graduates and specialists. Currently, there are more than 250 hospitals and institutions all over the country that have been accredited by the NBE for conducting postgraduate and superspecialty courses in this country.[9]

However, it is now generally perceived that the quality of training being imparted by the majority of both MCI and NBE affiliated institutions has deteriorated alarmingly as there has yet been no systematic assessment of their products in terms of their clinical and academic competence or research output.[10–12]

It would be difficult to evaluate fairly and objectively clinical competence or teaching, but research output is easy to measure through the available databases and is used by many well-known publications, such as the popular QS World University Rankings. It incorporates indices like the academic peer review, faculty/student ratio, and citations per faculty as tools of assessment of research output.[13–15] There are others, such as the US News and World Report, the Shanghai, and the Times Higher Education Ranking Systems that have also been widely used for the same purpose.[16,17]

We decided to evaluate the research output of all the MCI and NBE institutions in India using Scopus, the largest database of peer-reviewed literature in existence. It contains around 53 million records, 70% with abstracts, 4.9 million conference proceedings, and 1200 open access journals. It has a 100% Medline coverage, with 20+ million records back to 1996.[18–22]

Using Scopus we carried out the following:

- Analyzed the total research output of all medical colleges and hospitals recognized by the MCI and NBE during 2005–2014.
- Assessed the output from individual states of India.
- Compared the research output of India's top medical institutions with some of the well-known ones abroad.

2. Methods

We counted the total number of documents (including original articles, reviews, case reports, and reports of conferences and symposia) published by an individual institute over a period of 10 years (2005–2014). For those established after 2005, we evaluated the number of publications from the year of establishment to 2014. The MCI and NBE institutes were listed in separate league tables.[23]

We ranked them as follows:

- Compiled a list of top 25 institutes under the MCI (Fig. 1) and the NBE (Fig. 2) from different states of India.
- Listed MCI and NBE institutes according to their State location, as well as their research publications (Tables 1 and 2).
- Compiled a cumulative list of the top 25 medical institutions (MCI + NBE) in descending order of the number of publications (Table 3).
- Compared the output of the top Indian institutions with some of the well-known institutes abroad over the same period (Table 3).

3. Results

There are a total of 579 medical institutes in the government and private sectors. 316 institutes were under the MCI and 263 under the NBE. Their total research output during the period 2005–2014 was 101,034 papers, with the average number of publications per institution being 14.5 papers per year.

However, there were 332 (57.3%) institutions that did not publish a single paper during this 10-year period, which included 162 (51.2%) under the MCI and 170 (64.6%) under the NBE.

Fig. 1 shows the cumulative state-wise list of top 25 medical colleges and hospitals under the MCI and their research output from 2005 to 2014. It shows that the top 10 medical institutes under the MCI, in order of their research output, are the All India Institute of Medical sciences (AIIMS) in New Delhi, the Postgraduate Institute of Medical Education and Research (PGIMER) in Chandigarh, the Christian Medical College (CMC) in Vellore, the Sanjay Gandhi Postgraduate Institute of Medical Sciences (SGPGIMS) in Lucknow, the King George Medical College (KGMC) in Lucknow, the Kasturba Medical college (KMC) in Manipal, the Tata Memorial Centre in Mumbai, the National Institute of Mental Health and Neurosciences (NIMHANS) in Bangalore, the Institute of Medical Sciences