Indian J Med Res 137, June 2013, pp 1204-1206

Correspondence

Report on institutions rankings - Where our medical institutions stand? Our big neighbour & the way forward

Sir,

In the recently released world rankings by Scimago Institutions Rankings (SIR) annual series report only 11 Indian medical institutions are included[1]. World, Regional and Country ranks (WR, RR, and CR) are computed based on output, normalized impact (NI), high quality publications (Q1), specialization index (SI), and excellence rate (Exc) with institutions with a minimum of 100 publications figuring in the list. Scientific leadership numbers are based on first authorship among joint publications. The SI indicates the specialization degree of institutions by characterizing the thematic dispersion (concentration) of their outputs. Values range from 0 to 1 in such a way that the institutions with scores close to 1 are highly specialized like medical laboratories or thematic research centers, while with whose score closer to 0 are generalistic institutions such as universities covering a wide range of research areas. This measure has helped to build comparisons amongst similar medical organizations. All the Indian medical institutions have specialization index within 0.8-0.9 and hence comparable.

SIR World Report 2011[1] shows several indicators to help assess research performance of institutions. The overall scientific impact of institutions can be characterized by their normalized impact by contextualizing their citation through subject areas, publication types and citation periods, minimizing the influence of institution sizes and profiles in NI scores. NI values relate the citation an institution receive comparing to world average which is equals to one.

An institution's ability to put its scientific production within the best scholarly journals is showed in the Q1 indicator. Specifically, it indicates the ratio of scientific publications that an institution manages to publish in the 25 per cent of the most influential journals as ranked by the scientific journal ranking (SJR) indicator.

The Indian Council of Medical Research (ICMR), New Delhi, scored highest in terms of indices for high quality publication, normalized impact and international collaboration. Normalized impact of <1.0 indicates that majority of institutions lag behind 10 to 50 per cent than the world average of 1. Speciality institutions dealing with single organ diseases scored highest in terms of high quality publications indicated by Q1 per cent when compared to other super-speciality institutions (NIMHANS & Sri Chitra vs AIIMS, PGIMER & SGPGI). Highest Q1 per cent of ICMR can be explained based on its output, normalized impact as well as leadership (Table). However, the fact that majority of the medical institutions making the grade, scored less than their counterparts worldover in terms of either high quality publications or normalized impact shows how far we lag behind. This is difficult to bridge only by increase in retirement age of faculty or by starting new medical colleges. The commensurate increase in specialized nursing and medical technology personnel training schools along with enhancement of emoluments and congenial patient care and research environment is the need of the hour.

Our big neighbour: A total of 332 Chinese institutions of higher education and health are listed in the SIR report making it second only to USA with 511 institutions[1]. Although it is difficult to assess the performance of Chinese medical institutions, yet over the last decade, China's output of articles in international scientific journals has quadrupled[2]. The most recent figures show that such initiatives have recruited more than 3,100

Table. Indian medical institutional ranking with Specialization index 0.8 - 0.9

S.No.	Institution	Output	Q1%	NI	Exc%	Leadership	WR	RR	CR
1	All India Institute of Medical Sciences (AIIMS), New Delhi	5625	36.9	0.7	5.7	4,441	602	132	8
2	Postgraduate Institute of Medical Education & Research (PGIMER), Chandigarh	3371	34.6	0.6	3.7	2882	946	224	16
3	Indian Council of Medical Research (ICMR), New Delhi	3299	49.2	0.9	8.1	2,277	963	231	17
4	Christian Medical College (CMC), Vellore	1634	39.5	0.7	4.9	1,353	1659	445	33
5	Sanjay Gandhi Postgraduate Institute of Medical Sciences (SGPGIMS), Lucknow	1460	38.2	0.7	5.5	1,257	1801	480	37
6	Tata Memorial Centre (TMC), Mumbai	1064	38.6	0.7	5.6	799	2230	601	54
7	Seth Gordhandas Sunderdas Medical College, Mumbai	989	26.1	0.6	2.9	763	2349	629	59
8	National Institute of Mental Health & Neuro Sciences (NIMHANS), Bangalore	970	43.6	0.7	5.3	732	2362	636	61
9	Sree Chitra Tirunal Institute for Medical Sciences & Technology, Thiruvananthapuram	791	45	0.6	4.2	672	2637	709	79
10	Jawaharlal Institute of Post- Graduate Medical Education and Research, Puducherry	742	20.5	0.5	2.3	669	2723	729	83
11	Gobind Vallabh Pant Hospital, New Delhi	396	37.6	0.7	4.6	290	3245	884	126

NI, normalized impact; Exc, excellence rate; WR, World rank; RR, regional rank; CR, country rank; Q1, high quality publications

top-flight academics, offering them tenured positions, research laboratories and one-time bonuses, generally of at least $150,000 per person. About 80,000 scientists with Ph. D degree have come home to China from the United States where they can run a laboratory bench for 20 cents of the dollars it costs in the United States[3]. Scimago journal and country ranking comparisons show that in the field of medicine Chinese scientists' output that was comparable with Indian scientist till 2002-2003 has doubled by year 2011[4]. It is noteworthy that researcher density in India remained stagnant at 2.2 per cent while it increased from 13.9 to 19.7 per cent in China at time points of 2002-2007[4].

The way forward: India needs a minimum of 1 per cent increase in researcher density for the next decade to match Chinese efforts[5]. It further shows that the need for putting governmental funding on fast track can not be overstated. The realization that investment in science and technology is likely to create more jobs and increase productivity compared to investment in law, management, banking and IT sectors should goad governments both at Federal and State level to give a serious thought to investment aspect. Health sector (both preventative and treatment) capable of creating more skilled, semi skilled and unskilled jobs of per dime spent compared to any other sector is a case in point. Governments both at federal and state levels should ponder over this and strive to bring emoluments of its administrative, managerial, scientific and technical leaders at par with management, banking and industry. It should be realized that it is inventors and not investors that increase productivity, job opportunities and human development index of a nation. Political and administrative leadership at State level can at least

make scientific and technical pursuit attractive enough to enhance deliverables. States that are fortunate to get newer AIIMS and other financially well off States like Gujarat, Maharashtra, Tamil Nadu should make every effort to establish at least one super speciality institution of their own. Foreign visits of chief ministers to attract foreign direct investment in their respective States should incorporate seeking of international cooperation in the field of health to establish one such institution in their States. This should form the agenda of their visits aboard. Simultaneous establishment of super-speciality medical education in States will help to bridge the gap in availability of medical educators that they lack at present.

The newer institutions need to overcome the thorny issues related to research output by following a strategy of drawing at least 15 to 30 per cent of their faculty strength from basic sciences with proven research track achievement and providing them core laboratory facilities. This investment will pay back in longer run.

Apex bodies dealing with science and technology and higher education at federal level need to undertake performance audit of their institutions. However, established medical institutions need to re-invent themselves. Constant innovation is the key to success. Re-birth requires shedding not only old cloths but also a soul that responds to changing times and environment. They will do best to build up their human resources particularly trained in modern human biology and biomedical sciences.

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