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Research output from private hospitals in India without medical colleges compared with that from medical colleges in India and healthcare institutions in the USA, China and the UK

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ABSTRACT

Objectives To evaluate the publications from private hospitals in India to which 60% of patients go

Design Descriptive. Data collection and analysis.

Setting Indian hospitals and medical colleges.

Interventions Nil.

Main outcome measures Numbers of publications included in Scopus, PubMed and Google Scholar. Compared with selected hospitals in the UK, USA and China.

Results The average number of publications of each of the top 50 Indian hospitals without medical colleges was 48, with medical colleges it was 338, USA 2898, China 3220 and the UK 2701

Conclusions There is a neglect of the enormous data that can be accessed from Indian patients going to the majority of Indian hospitals. This may be due to lack of incentive, absence of electronic hardware or priorities which are mainly commercial.

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ There is very little research output from Indian private hospitals but this has not been documented so carefully before and not compared with other countries.

WHAT THIS STUDY ADDS

⇒ This study confirms that in spite of their dealing with most of the population, doctors in private hospitals in India do little research. This is due to their own lack of incentives and the profit motivation of their employers. Even public hospital research is far behind similar institutions in the UK, USA and China.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ If healthcare in India is to improve, more and better research should be encouraged.

INTRODUCTION

Medical research is one of the most important drivers of improvements in health.[1] In India hitherto most research publications till recently were from medical colleges but in the last 30 years with the rise of the private hospitals, which are not attached to medical colleges and to which probably about 60% of the population goes, there has been an increase in the papers published from this large group of healthcare providers.[2 3] There are now 49000 of Indian medical institutions 800 attached to medical colleges and the vast majority, approximately 48000, not attached to any teaching systems. Hitherto this latter group of hospitals, for various reasons, did very little research and publication but recently some of them have become more active in the field.[4] This we feel provides hope for the future. The number of citations received from Indian papers were small compared to the others namely the USA and Britain.[5]

Research and publication are among to major hallmarks of good medical institutions and there is evidence that those which produce high quality research also provide better patient care.[6] The quality and quantity of research output is also a major factor in ranking medical institutions all over the world including the well known US News and World Report, the Quacquarelli Symonds assessment, the University Grants Commission of the UK as well as the National Institute Ranking Framework of India.

Although India is fourth among the world leaders in the *quantity* of its research

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Table 1 Research output of major private non-medical-college hospitals in India (2021–2025)

Rank	Hospital	State	PubMed	Scopus	Google Scholar	Per year
1	Sir Ganga Ram Hospital, New Delhi	Delhi	980	1215	1600	1265 (253)
2	Medanta – The Medicity, Gurugram	Haryana	840	1030	1400	1090 (218)
3	Apollo Hospitals, Greams Road, Chennai	Tamil Nadu	720	870	1200	930 (186)
4	Kokilaben Dhirubhai Ambani Hospital, Mumbai	Maharashtra	520	650	880	683 (137)
5	P.D. Hinduja Hospital, Mumbai	Maharashtra	470	540	800	603 (121)
6	Max Super Speciality Hospital, Saket	Delhi	390	480	670	513 (103)
7	Jaslok Hospital & Research Centre	Maharashtra	360	420	620	467 (93)
8	Breach Candy Hospital Trust	Maharashtra	300	350	500	383 (77)
9	Fortis Memorial Research Institute	Haryana	270	320	480	357 (71)
10	Lilavati Hospital & Research Centre	Maharashtra	270	325	460	352 (70)
11	Indraprastha Apollo Hospitals	Delhi	250	298	420	323 (65)
12	Apollo Health City, Hyderabad	Telangana	230	280	410	307 (61)
13	Bombay Hospital & Medical Research Centre	Maharashtra	210	252	350	271 (54)
14	Aster CMI Hospital	Karnataka	200	250	330	260 (52)
15	Aster Medcity, Kochi	Kerala	190	230	310	243 (49)
16	Narayana Health City	Karnataka	180	220	320	240 (48)
17	BLK-Max Super Speciality Hospital	Delhi	180	220	320	240 (48)
18	Artemis Hospital, Gurugram	Haryana	170	207	300	226 (45)
19	Manipal Hospital, Old Airport Road	Karnataka	165	203	290	219 (44)
20	Apollo Hospitals, Bannerghatta Road	Karnataka	160	203	280	214 (43)
21	Fortis Escorts Heart Institute	Delhi	150	190	260	200 (40)
22	Fortis Hospital Mohali	Punjab	145	190	250	195 (39)
23	Gleneagles Global Hospital, Chennai	Tamil Nadu	130	173	220	174 (35)
24	Fortis Hospital Noida	Uttar Pradesh	120	160	200	160 (32)
25	Kauvery Hospital, Chennai	Tamil Nadu	115	151	190	152 (30)
26	Sir H. N. Reliance Foundation Hospital	Maharashtra	110	149	180	146 (29)
27	Asian Institute of Medical Sciences	Haryana	105	137	170	137 (27)
28	Paras Hospital, Gurugram	Haryana	95	125	160	127 (25)
29	Moolchand Hospital	Delhi	90	112	150	117 (23)
30	National Heart Institute	Delhi	80	101	135	105 (21)
31	Jaypee Hospital, Noida	Uttar Pradesh	78	100	130	103 (21)
32	Shroff Eye Centre	Delhi	75	99	120	98 (20)
33	Madras Medical Mission	Tamil Nadu	72	95	115	94 (19)
34	Centre for Sight	Delhi	70	90	110	90 (18)
35	Eye Q Hospitals	Haryana	65	84	100	83 (17)
36	CARE Hospitals Hyderabad	Telangana	60	64	120	81 (16)
37	Bhatia Global Hospital	Delhi	60	80	95	78 (16)
38	Yashoda Hospitals Hyderabad	Telangana	55	63	110	76 (15)
39	Aakash Healthcare Super Speciality	Delhi	58	75	90	74 (15)
40	Sunshine Hospitals	Telangana	52	61	100	71 (14)
41	Primus Super Speciality Hospital	Delhi	55	71	85	70 (14)
42	AMRI Hospitals	West Bengal	50	58	95	68 (14)
43	Kailash Hospital, Noida	Uttar Pradesh	52	68	80	67 (13)
44	Apollo Gleneagles Hospital	West Bengal	48	57	90	65 (13)
45	Ruby Hall Clinic, Pune	Maharashtra	50	66	78	65 (13)
46	HCG Cancer Centre	Karnataka	48	56	85	63 (13)
47	Rajiv Gandhi Cancer Institute	Delhi	45	54	80	60 (12)
48	Sir Ganga Ram City Hospital	Delhi	40	50	75	55 (11)
49	Medicover Hospitals	Telangana	38	48	70	52 (10)
50	Dr Mehta's Hospital, Chennai	Tamil Nadu	35	44	65	48 (10)
Average (top 50)			186	229	315	242 (48)

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Table 2 Research output from 50 Indian hospitals with medical colleges (2021–2025)

No.	Institution	State	PubMed	Scopus	Google Scholar	Average (per year)
1	All India Institute of Medical Sciences, New Delhi	Delhi	4638	6821	9487	6982 (1396)
2	Christian Medical College	Tamil Nadu	3276	5088	7635	5333 (1067)
3	Jawaharlal Institute of Postgraduate Medical Education and Research	Puducherry	2384	3726	5668	3926 (785)
4	Amrita Institute of Medical Sciences	Kerala	2096	3348	5215	3553 (711)
5	Institute of Medical Sciences BHU	Uttar Pradesh	1897	3145	5240	3427 (685)
6	King George's Medical University	Uttar Pradesh	1762	2894	4633	3096 (619)
7	Kasturba Medical College	Karnataka	1674	2716	4389	2926 (585)
8	St. John's Medical College	Karnataka	1548	2592	4124	2755 (551)
9	Maulana Azad Medical College	Delhi	1437	2476	3898	2604 (521)
10	Grant Medical College and Sir JJ Group of Hospitals	Maharashtra	1345	2261	3576	2394 (479)
11	Osmania Medical College	Tamil Nadu	1128	1845	3062	4029 (466)
12	Kasturba Medical College	Karnataka	1189	1914	3127	2077 (415)
13	Osmania Medical College	Telangana	1128	1845	3062	2012 (402)
14	Armed Forces Medical College	Maharashtra	1032	1738	2896	1889 (378)
15	Government Medical College	Kerala	1046	1728	2864	1879 (376)
16	Saveetha Medical College	Tamil Nadu	1028	1741	2865	1878 (376)
17	SMS Medical College	Rajasthan	1014	1682	2796	1831 (366)
18	Lady Hardinge Medical College	Delhi	1006	1654	2732	1797 (359)
19	Bangalore Medical College	Karnataka	978	1611	2684	1758 (352)
20	SRM Medical College Hospital and Research Centre	Tamil Nadu	948	1562	2587	1699 (340)
21	Government Medical College Kozhikode	Kerala	916	1524	2558	1666 (333)
22	Dr. Ram Manohar Lohia Institute of Medical Sciences	Uttar Pradesh	932	1536	2485	1651 (330)
23	Government Medical College Kottayam	Kerala	824	1396	2328	1516 (303)
24	Government Medical College Thrissur	Kerala	780	1320	2200	1433 (286)
25	Government Medical College Aurangabad	Maharastra	760	1290	2150	1400 (280)
26	AIIMS Bhopal	Madhya Pradesh	718	1246	2064	1343 (269)
27	Government Medical College	Maharashtra	742	1218	2043	1334 (267)
28	Kalinga Institute of Medical Sciences	Odisha	736	1224	2036	1332 (266)
29	Government Medical College	Chandigarh	721	1186	1987	1298 (260)
30	Bharati Vidyapeeth Medical College	Maharashtra	637	1108	1823	1189 (238)
31	AIIMS Jodhpur	Rajasthan	642	1098	1784	1175 (235)
32	DY Patil Medical College	Maharashtra	618	1086	1792	1165 (233)
33	AIIMS Rishikesh	Uttarakhand	633	1076	1749	1153 (231)
34	AIIMS Bhubaneswar	Odisha	621	1054	1712	1129 (226)
35	DY Patil Medical College	Maharashtra	524	914	1526	988 (198)
36	Hamdard Institute of Medical Sciences and Research	Delhi	512	906	1498	972 (194)
37	AIIMS Patna	Bihar	418	724	1216	786 (157)
38	AIIMS Raipur	Chhattisgarh	406	701	1189	765 (153)
39	Manipal Tata Medical College	Jharkhand	342	574	945	620 (124)
40	Jamia Hamdard Institute of Medical Sciences	Delhi	328	548	912	596 (119)
41	Sharda Medical College	Uttar Pradesh	276	528	932	579 (116)
42	KPC Medical College	West Bengal	316	528	884	576 (115)
43	Teerthanker Mahaveer Medical College	Uttar Pradesh	263	514	918	565 (113)
44	Integral Institute of Medical Sciences	Uttar Pradesh	258	506	904	556 (111)
45	AIIMS Nagpur	Maharashtra	268	512	928	569 (114)
46	AIIMS Gorakhpur	Uttar Pradesh	214	436	812	487 (97)
47	AIIMS Kalyani	West Bengal	207	421	798	475 (95)
48	AIIMS Bibinagar	Telangana	168	332	654	385 (77)
49	Noida International Institute of Medical Sciences	Uttar Pradesh	164	318	642	375 (75)
50	Amity Medical School	Uttar Pradesh	132	276	518	309 (62)

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Table 2 Continued

No.	Institution	State	PubMed	Scopus	Google Scholar	Average (per year)
Average (top 50)			891	1460	2240	1530 (306)

publications after the USA, China and the UK its *quality*, as assessed by the number of citations it receives, drops it down to ninth which means that the papers are not referred to and they do not make a major impact on the world stage.[7]

Indian healthcare is now dominated by hospitals in the private sector many of whom are controlled by large corporate houses whose main purpose is making a profit for its shareholders so education and research is not a priority.

We assessed the number of publications from Indian medical institutions without medical colleges, those with colleges and, to put the results in an international perspective, contrasted these with the world leaders in the field namely the USA, China and the United Kingdom. We then discuss why there is so little quality medical research done in India and how it can be improved because we believe that if this large group of private hospitals is encouraged to do research and publication we will be able not only to compete with the rest of the world but to improve the healthcare of our own countrymen by offering them medical care which is up to date, economical and most importantly appropriate.

METHODS

We retrieved data from publicly available sources on the scientific publications produced from 50 of the major private hospitals in India with and without attached medical colleges which had the highest research output during the 5-year period from January 2021 up to December 2025. We then compared these with the numbers of publications from 10 leading US, Chinese and British hospitals over the same period.

RESULTS

Approximately 99.9% of hospitals without medical colleges produce fewer than 10 publications annually. Among the top 50 non-teaching hospitals, the average of 48 publications per year is only one-seventh of the 338 produced by medical colleges. India's top 10 hospitals without medical colleges and with medical colleges average 133 and 740 publications, respectively. This output remains much lower than global leaders in the UK (2701), the USA (2898), and China (3,220).

1. Indian hospitals without medical colleges (table 1).
2. Indian hospitals with medical colleges (table 2).
3. Research output from top 10 medical colleges from the UK, USA and China (tables 3–5).
4. Average publication numbers per year from the top 10 medical institutions in different countries (figure 1).

DISCUSSION

Our data shows that in spite of its 1.4 billion population, 1 lakh doctors, 44 000 hospitals and 800 medical colleges the research output from this country, which is one of the hallmarks of good medical care, is very low compared with the USA, UK and, surprisingly, China.

Probably the main reason for this is that there is very little incentive to do research in most Indian institutions. In the private sector it is generally thought to be a waste of time and money and in the public sector in which promotion is usually based on seniority, is timebound and often needs 'influence and backing' it does not add much to a faculty member's credentials. Moreover we believe that the Indian education system from school to college encourages rote learning rather than a spirit of enquiry which is essential for good research in any

Table 3 Research output from top 10 medical colleges from USA

Institution	PubMed	Scopus	Google Scholar	Average (per year)
Harvard Medical School	12 846	18 492	26 715	19 351 (3870)
Johns Hopkins University School of Medicine	11 238	16 374	23 588	17 067 (3413)
University of California San Francisco	10 416	15 082	21 934	15 811 (3162)
Stanford University School of Medicine	9842	14 268	20 845	14 985 (2997)
Mayo Clinic Alix School of Medicine	9186	13 422	19 658	14 089 (2818)
University of Pennsylvania Perelman School of Medicine	8934	12 978	18 952	13 621 (2724)
Columbia University Vagelos College of Physicians and Surgeons	8612	12 436	18 264	13 104 (2621)
Yale School of Medicine	8294	11 982	17 544	12 607 (2521)
University of Michigan Medical School	8048	11 674	17 022	12 248 (2450)
Duke University School of Medicine	7926	11 428	16 735	12 030 (2406)
Total	95 342	138 136	200 257	144 913 (28 982)

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Table 4 Research output from top 10 medical colleges from China

Institution	PubMed	Scopus	Google Scholar	Average (per year)
Shanghai Jiao Tong University School of Medicine	10678	17592	25486	17919 (3584)
Peking University Health Science Center	10234	16894	24612	17247 (3449)
Fudan University Shanghai Medical College	9812	16248	23670	16577 (3315)
West China Medical Center Sichuan University	9628	16014	23284	16309 (3262)
Zhejiang University School of Medicine	9436	15874	22910	16073 (3215)
Central South University Xiangya School of Medicine	9386	15628	22716	15910 (3182)
Sun Yat-sen University Medical Sciences	9158	15246	22138	15514 (3103)
Huazhong University of Science and Technology Tongji Medical College	9024	14982	21644	15217 (3043)
Nanjing Medical University	8894	14812	21468	15058 (3012)
Capital Medical University	8762	14528	20986	14759 (2952)
Total	95012	157818	229914	160915 (32 203)

subject. The compulsory thesis topics that are allocated to postgraduates are generally compiled quickly during the end of their tenure, are often plagiarised and very few are eventually published.[8]

Our education system has evolved after centuries of British colonial rule where original thinking was not encouraged.

The barriers to producing good research include the absence of good patient records. Few doctors take a long history and put it to paper and, more rarely, upload it onto a computer programme. Now it has become routine in most Western countries to use an Electronic Medical Records system which is available nationwide for analysis with suitable data protection.

Instead of focusing on revenue and patient numbers, hospital administrators should realise that publication enhances institute branding as well as clinical excellence. It is probably worthwhile to introduce financial and other inducements which, apparently, are responsible for the current Chinese success.

We also believe that it should be compulsory to have formal academic programmes in every medium sized hospital such as the Diploma of the National Board of Examinations (DNB) and collaborate with universities and other similar institutions.

Although it has been suggested that faculty should have protected academic time, we do not think this is possible in poor countries where resources are scarce and clinical duties should remain foremost. Also, much of the best research in history has been done by doctors who have had the busiest practice.

To place our research output in some sort of perspective, we must remember that the Mayo Clinic produces 8000 papers annually which is more than the entire Indian private sector.

We therefore recommend that private hospitals in India with and without medical colleges must evolve into academic healthcare systems.

Table 5 Research output from top 10 medical colleges from UK

Institution	PubMed	Scopus	Google Scholar	Average (per year)
University of Oxford Medical Sciences Division	10286	14894	21476	15552 (3110)
University College London Medical School	9824	14216	20546	14862 (2972)
University of Cambridge School of Clinical Medicine	9732	14028	20218	14659 (2932)
Imperial College London Faculty of Medicine	9514	13762	19874	14383 (2877)
King's College London School of Medicine	9048	13174	18932	13718 (2744)
University of Edinburgh Medical School	8726	12688	18240	13218 (2644)
University of Manchester Faculty of Biology Medicine and Health	8512	12346	17698	12852 (2570)
University of Glasgow School of Medicine	8124	11792	16874	12263 (2453)
University of Bristol Medical School	7942	11486	16492	11973 (2395)
University of Birmingham College of Medical and Dental Sciences	7684	11124	15938	11582 (2316)
Total	89392	129510	187288	135062 (27 013)

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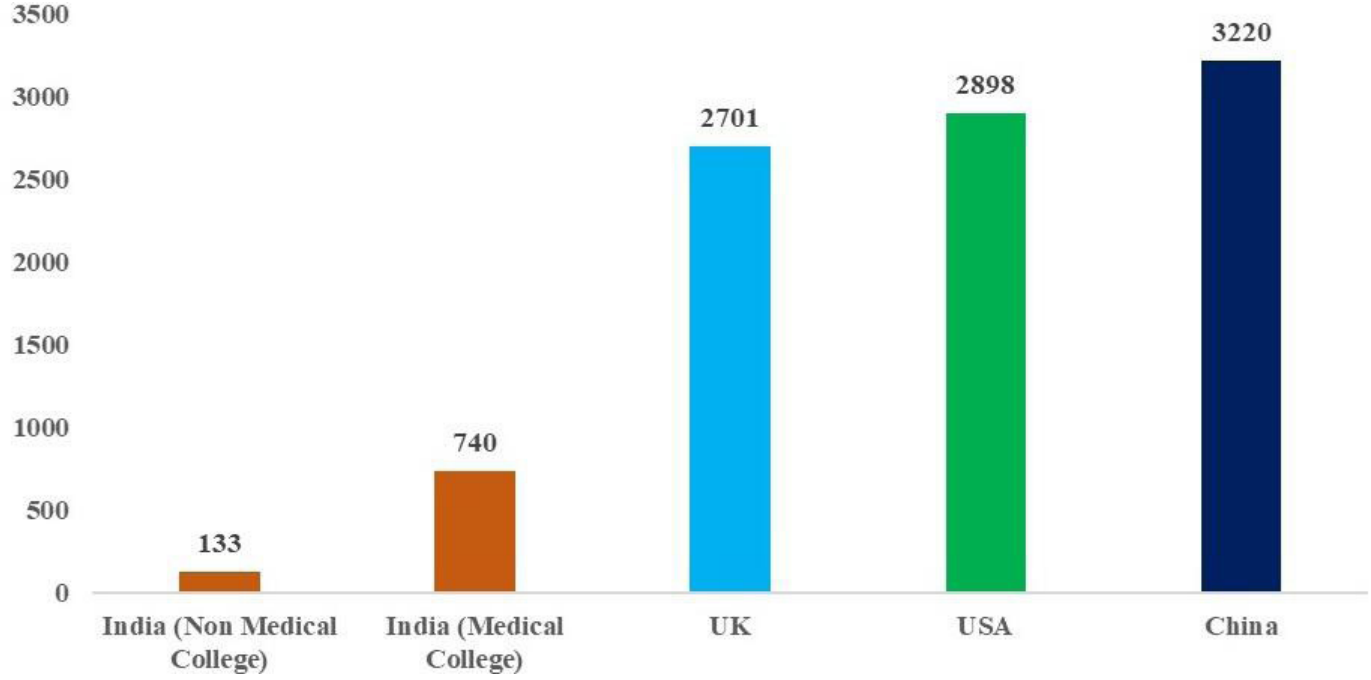

Figure 1 Average Publications number per year from the top 10 medical institutions in different countries.

This will result in quality improvement, better patient outcomes and the institution will acquire a national and perhaps a global reputation

CONCLUSION

Compared with the USA, UK and China, the medical research output from India is very low. We believe that private non-medical-college hospitals in India represent an underused academic resource. With appropriate structural reforms and incentives they, with their medical college counterparts, have the potential to significantly enhance India's global standing in this important field.

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