

Medical Education

Acute shortage of teachers in medical colleges: Existing problems and possible solutions

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CURRENT SCENARIO

In 1965, there were 86 medical colleges in India. This number increased to 112 by 1980 (a rate of growth of 30%), to 143 in the next decade (a rate of growth of 28%), and since 1990 over the past 17 years to 260, an increase of 82% compared with the figure in 1990.

Of the 260 medical colleges recognized or permitted by the Medical Council of India (MCI), as listed on the MCI website in December 2006, just over half (53%) were in the private sector and the rest in the public sector. With near doubling in the number of medical colleges over the past 15 years, it would be interesting to see whether the human resource in the form of medical college teachers has kept pace to fulfil the criteria of adequate staffing norms of the MCI. Gross shortage of teachers promotes unhealthy practices during inspections. The MCI is aware of these facts and has taken important measures to minimize, if not eliminate, these unhealthy practices. It has, however, not always been successful.

Of the 260 medical colleges in existence, 181 are recognized by the MCI and 79 are MCI permitted; 26 of these 260 colleges admit 50 students per year, 146 admit 50–100 students per year and 88 admit ≥ 150 students per year. The total intake of medical students in these colleges is 29 072 (20 842 in MCI recognized institutions and 8230 in MCI permitted institutions). The annual student intake is a critical factor in assessing the requirement for teachers for various subjects.

TEACHER REQUIREMENT AND AVAILABILITY

The teacher manpower required for different categories of institutions based on student intake is shown in Table I. The requirement varies from 2 per department to 7 per department for colleges with 50 admissions per year to 2–12 per department for ≥ 150 admissions. The teacher requirement for Community Medicine includes the faculty for epidemiology, statistics and the rural and urban health centres. A total of 70 teachers are required per college for 50 admissions, 90 for ≥ 50 –100 admissions and 125 for 150 admissions per year. This manpower requirement is only for the MB,BS course.

With these norms nearly 26 000 medical teachers are required to adequately staff 260 colleges for the MB,BS course alone. This number has been arrived at by multiplying the faculty required per college based on student intake by the number of colleges with that intake of students and summing up the total.

Using the existing norms, the total teacher requirement for different disciplines for all medical colleges in India has been

calculated (Table II). For the MB,BS course alone, over 2000 teachers are required for Community Medicine, General Medicine and General Surgery, 1600–2000 for Anatomy, Physiology, Pathology and Anaesthesiology and 1000–1500 for Pharmacology, Paediatrics, Orthopaedics, Obstetrics and Gynaecology and Radiodiagnosis.

However, teachers are required not only for undergraduate but also for postgraduate courses. The data available on the MCI website for the number of colleges offering various courses along with the postgraduate student intake in different departments (available seats) is shown in Table III. The available seats for postgraduates are highest for Medicine and Surgery and progressively decline in the pre- and paraclinical departments with the lowest intake in Forensic Medicine and Tuberculosis and Respiratory Diseases. However, many seats in the pre- and paraclinical departments remain unfilled for want of takers. Hence, the actual annual numbers available after postgraduation in various specialties is likely to be only about 75% of these numbers because of vacant seats, dropouts and attrition due to

TABLE I. Teacher manpower required as per the Medical Council of India norms for the MB,BS course per college

| Subject | For colleges with (admissions/year) | | |
|---------------------------------------------|-------------------------------------|-----------|------------|
| | Up to 50 | Up to 100 | ≥ 150 |
| Anatomy | 4 | 6 | 8 |
| Physiology and Biophysics | 4 | 6 | 8 |
| Biochemistry | 3 | 3 | 4 |
| Pathology | 3 | 7 | 10 |
| Microbiology | 3 | 3 | 5 |
| Pharmacology | 3 | 4 | 6 |
| Forensic Medicine | 2 | 3 | 5 |
| Community Medicine | 7 | 8 | 10 |
| General Medicine | 6 | 8 | 12 |
| Tuberculosis and/or Respiratory Diseases | 2 | 2 | 2 |
| Dermatology | 2 | 2 | 2 |
| Psychiatry | 2 | 2 | 2 |
| Paediatrics | 4 | 4 | 6 |
| General Surgery | 6 | 8 | 12 |
| Orthopaedics | 3 | 4 | 6 |
| Otorhinolaryngology (ENT) | 2 | 2 | 2 |
| Ophthalmology | 2 | 2 | 2 |
| Obstetrics and Gynaecology | 3 | 4 | 6 |
| Radiodiagnosis | 3 | 4 | 6 |
| Anaesthesiology | 4 | 6 | 8 |
| Dentistry | 2 | 2 | 3 |
| Total faculty per college | 70 | 90 | 125 |

TABLE II. Total subject-wise teacher requirement for the MB,BS course

| Subject | Upto 50 | Upto 100 | ≥150 | Total |
|----------------------------|-----------------|-----------------|-----------------|--------|
| | admissions/year | admissions/year | admissions/year | |
| | n=26 colleges | n=146 colleges | n=88 colleges | |
| Anatomy | 104 | 876 | 704 | 1684 |
| Physiology and Biophysics | 104 | 876 | 704 | 1684 |
| Biochemistry | 78 | 438 | 352 | 868 |
| Pathology | 78 | 1022 | 880 | 1980 |
| Microbiology | 78 | 438 | 440 | 856 |
| Pharmacology | 78 | 584 | 528 | 1190 |
| Forensic Medicine | 52 | 438 | 440 | 930 |
| Community Medicine | 182 | 1168 | 880 | 2130 |
| General Medicine | 156 | 1168 | 1056 | 2380 |
| Tuberculosis | 52 | 292 | 176 | 520 |
| Dermatology | 52 | 292 | 176 | 520 |
| Psychiatry | 52 | 292 | 176 | 520 |
| Paediatrics | 104 | 584 | 528 | 1216 |
| General Surgery | 156 | 1168 | 1056 | 2380 |
| Orthopaedics | 78 | 584 | 528 | 1190 |
| Otorhinolaryngology (ENT) | 52 | 292 | 176 | 520 |
| Ophthalmology | 52 | 292 | 176 | 520 |
| Obstetrics and Gynaecology | 78 | 584 | 528 | 1190 |
| Radiodiagnosis | 78 | 584 | 52 | 1190 |
| Anaesthesiology | 104 | 876 | 704 | 1684 |
| Dentistry | 52 | 292 | 264 | 508 |
| Total | | | | 25 690 |

TABLE III. Postgraduate courses and seats available in different subjects

| Subject | No. of colleges offering course | Total no. of seats available in the subject | Approximate number likely to be available per year after graduation* |
|-------------------------------------------------|---------------------------------|---------------------------------------------|----------------------------------------------------------------------|
| MD Anatomy | 23 | – | – |
| MS Anatomy | 79 | 221 | 170 |
| MD Physiology | 85 | 172 | 130 |
| MD Biochemistry | 66 | 133 | 100 |
| MD Pathology | 124 | 448 | 340 |
| MD Microbiology | 88 | 214 | 160 |
| MD Pharmacology | 87 | 182 | 140 |
| MD Forensic Medicine | 42 | 67 | 50 |
| MD Community Medicine | 37 | – | – |
| MD Social and Preventive Medicine | 80 | 163 | 125 |
| MD General Medicine | 141 | 1200 | 900 |
| MD TBRD (Tuberculosis and Respiratory Diseases) | 46 | 74 | 55 |
| MD Dermatology | 32 | 145 | 110 |
| MD Dermatology, Venereology and Leprology | 43 | – | – |
| MD Psychiatry | 58 | 125 | 95 |
| MD Paediatrics | 117 | 499 | 380 |
| MS General Surgery | 131 | 1049 | 790 |
| MS Orthopaedics | 109 | 370 | 280 |
| MS Otorhinolaryngology (ENT) | 102 | 248 | 190 |
| MS Ophthalmology | 109 | 356 | 270 |
| MD Obstetrics and Gynaecology | 112 | – | 460 |
| MS Obstetrics and Gynaecology | 18 | 617 | – |
| MD Radiodiagnosis | 63 | – | – |
| MD Radiology | 16 | 162 | 120 |
| MD Anaesthesiology | 12 | – | – |
| MS Anaesthesia | 57 | 609 | 460 |

* see text for details of calculation

failure in the final examination (last column of Table III). For subjects such as Forensic Medicine, Psychiatry, Tuberculosis and Respiratory Diseases, etc. less than 100 fresh qualified teachers will be available per year even assuming that all who qualify would desire to be teachers at a medical college.

ANOMALIES AND MISMATCHES

Although the MCI requirements are the same for the disciplines of Tuberculosis, Dermatology, Psychiatry, Otorhinolaryngology (ENT) and Ophthalmology, the number of postgraduates qualifying from these departments is very different at 94, 145, 125, 248 and 356, respectively. This indicates a gross disparity between supply and demand. There are other such obvious examples.

If one considers the teacher requirement in medical colleges taking into account the additional requirement as per MCI norms for colleges which conduct postgraduate courses in addition to the MB,BS course, several other mismatches come to light. As per the MCI requirements for postgraduate courses, in pre- and paraclinical departments of Anatomy, Physiology, Biochemistry, Pharmacology, Pathology, Microbiology, Community Medicine, Forensic Medicine and in the clinical disciplines of Radiodiagnosis and Anaesthesiology an additional 2 faculty members are required in the respective departments over and above the requirement for undergraduate courses. For the other clinical departments one additional faculty member per unit is the prescribed norm.

Based on these norms, the faculty requirements for various departments conducting both MB,BS and postgraduate courses are shown in Table IV. For clinical departments, it has been assumed that Orthopaedics has 2 units and other departments such as Medicine, Paediatrics, Surgery, Orthopaedics and Obstetrics and Gynaecology have 3 units. This is a conservative estimate and the actual requirements may be more depending on the number of clinical units in existence in a particular college.

The last columns in Tables III and IV show a clear mismatch between the requirements and annual availability for different subjects.

EXISTING PROBLEMS

1. Considering the large number of faculty required (Table IV), there is an acute shortage of teaching manpower in medical colleges both in the long standing and newly started ones. This shortage is in the region of 20%–25% in most departments and as high as 33% in some departments (based on personal observations and discussions). The shortage is mainly attributable to non-availability of qualified personnel willing to take up employment in medical colleges on the current terms and conditions.
2. In addition to the existing vacancies, there is an annual decrement due to superannuation, resignation, etc. of 10%–15% of the existing faculty strength. If one matches the current shortfall in teacher strength in various departments to the actual number of newly available qualified teachers in that discipline, one can conclude that the current shortage in terms of annual requirement of teachers in different disciplines is more than two-thirds in most departments and is likely to increase by 10% every year due to superannuation and other losses.

For example, the required number of anatomy teachers for undergraduate and postgraduate courses is 1888. A 25% vacancy rate amounts to a shortage of 472 teachers. The actual number of teachers qualifying in anatomy per year is about 170, which is 36% of the requirement. The shortfall at present is therefore 64% on an annual basis. The shortage particularly affects faculty posts at the senior level.

3. MCI norms require a 1:1 ratio to be maintained between students and postgraduate teachers. This is excellent in an ideal situation. Unfortunately, what it does is to create excess seats in well-populated departments and a shortage

TABLE IV. Total faculty requirement for existing undergraduate and postgraduate courses combined as per the Medical Council of India norms

| Subject | Faculty for MB,BS | No. of postgraduate courses | Faculty for postgraduate courses | Total |
|---------------------------------------|-------------------|-----------------------------|----------------------------------|-------|
| Anatomy | 1684 | 102 | 204 | 1888 |
| Physiology | 1684 | 85 | 170 | 1854 |
| Biochemistry | 868 | 66 | 132 | 1000 |
| Pathology | 1980 | 124 | 248 | 2104 |
| Microbiology | 856 | 88 | 176 | 1032 |
| Pharmacology | 1190 | 87 | 174 | 1364 |
| Forensic Medicine | 930 | 42 | 84 | 1014 |
| Community Medicine | 2130 | 117 | 234 | 2481 |
| General Medicine | 2380 | 141 | 423 | 2803 |
| Tuberculosis and Respiratory Diseases | 520 | 46 | 92 | 612 |
| Dermatology | 520 | 75 | 150 | 670 |
| Psychiatry | 520 | 58 | 116 | 636 |
| Paediatrics | 1216 | 117 | 351 | 1567 |
| General Surgery | 2380 | 131 | 393 | 2773 |
| Orthopaedics | 1190 | 109 | 218 | 1408 |
| Otorhinolaryngology (ENT) | 520 | 102 | 204 | 724 |
| Ophthalmology | 520 | 109 | 218 | 738 |
| Obstetrics and Gynaecology | 1190 | 130 | 390 | 1580 |
| Radiodiagnosis | 1190 | 79 | 158 | 1348 |
| Anaesthesiology | 1684 | 132 | 264 | 1948 |

in departments where there is already a faculty shortage, i.e.

- Departments with more teachers at present will get more postgraduate seats and more teachers for future.
- Departments with shortage of teachers at present will get less postgraduate seats and less teachers for the future.

The current policy is therefore a vicious circle likely to lead to an increasing shortage.

4. Non-medical teachers can be employed only to a limited extent. As per current guidelines, they cannot comprise more than 30% of the teacher strength in Anatomy, Physiology, Microbiology and Pharmacology and not more than 50% in Biochemistry. These are the departments where presently there is an acute shortage of qualified medical teachers. Also, a distinction is made between non-medical postgraduate qualifications such as MSc or PhD obtained under the faculty of medicine and those obtained under the faculty of science with regard to the eligibility for being medical college teachers. This is a serious anomaly as there are departments which produce postgraduates in both faculties at the same time leading to a situation where some of their students are eligible to be postgraduate teachers while others are not. In a recent advertisement from our institute for faculty, the number of applications from non-medical graduates in these departments exceeded those from medical teachers in a ratio of 3:1 or more for different subjects. However, many of them had an MSc or a PhD from the faculty of science and not medicine and hence were ineligible.
5. The eligibility criteria for teachers are stringent. These do not give any weightage to aptitude for teaching. There is no weightage also for qualifications over and above those that are required, e.g. PhD. Experience as a senior resident in central or other institutions is not counted as teaching experience when being considered for promotions. This leads to a glaring anomaly.

For example, a fresh MD or MS may choose one of the two options. The person may join a private medical college as a lecturer or assistant professor or may join a central institution such as All India Institute of Medical Sciences, as a Senior Resident and actively participate in teaching activities. At the end of 3 years, the former would have 3 years of teaching experience and the latter would have none. The former would be eligible for promotion to Associate Professor after an additional 2 years as per MCI norms and the latter would need to put in 5 more years of service for the same post.

6. No weightage is given for working in a teaching department and performing teaching assignments if the person has no teaching designation even if the candidate possesses a postgraduate qualification.

SUGGESTIONS

The MCI guidelines for minimum staff requirements are exactly what they purport to be—minimum requirements and not optimum requirements. Hence, in situations where the workload is heavy or major research activities are undertaken, the actual teacher requirement and hence the manifest shortage of teachers may be much more.

In 1997, the MCI guidelines were modified to give a clear direction towards small group teaching. For small group teaching-learning activity, the teacher requirement would exceed the minimum numbers prescribed by the MCI. Hence, the whole issue of human resources in the form of medical teachers

requires a thorough reappraisal on an urgent basis if the system is not to fail.

The following suggestions are worth considering in this regard.

1. The MCI guideline on the eligibility criteria for teachers of different designations may have to be reviewed and perhaps relaxed as a temporary measure to overcome the critical shortage of qualified teachers at the junior level.
2. Special incentives in the form of increased weightage for additional qualifications such as a PhD may be an added attraction to enter the teaching profession for others. Since research training is an important function of medical colleges, recruiting teachers with doctorates would be a commendable step in this direction. We may consider exempting candidates with outstanding merit and demonstrated competence and aptitude for teaching, patient care and research from the minimum requirement and thus enable them to be directly appointed as teachers at a suitable level as is being done in many other countries.
3. As a short term and intermediate term measure, proportional teaching weightage may be given to those who are working full time in teaching departments and actively participating in teaching activities, e.g. specialists or general duty medical officers working in teaching departments with teaching duties, but without teaching designations, to enable them to have the period counted as teaching experience. In fact there are many doctors with tremendous aptitude and interest in teaching and performing teaching duties on a regular basis that now stand excluded from joining the teaching profession since their experience is not counted.
4. The retaliatory de-recognition of some foreign degrees by the Government of India has closed the doors to many doctors working in countries such as the UK who would like to return to India and join the medical faculty. These doctors have obtained their postgraduate qualification in the UK and have been actively involved with undergraduate and postgraduate training. Due to a recent change in the policy regarding immigration of doctors in the UK, this large pool desires to come back to India and join the teaching profession but is unable to do so under the current regulations. This matter requires serious consideration.
5. Special incentives may be provided to retired teachers to continue to work as teachers perhaps on a part-time basis. This will to some extent overcome shortage at the senior level.
6. The desirability of raising the retirement age to 70 years for medical teachers subject to fitness and willingness also merits consideration.
7. Serious consideration needs to be given to sharing faculty between different medical colleges in critically deficient areas.
8. As a short term measure the restarting of the honorary system may allow the services of qualified medical personnel to be available for a few hours to medical colleges as part-time teachers.
9. Additional monetary, academic or other incentives for teachers may attract more entrants to the profession and prevent outward migration.
10. The constraints, in the form of percentage permissible, on recruitment of non-MB,BS faculty in the pre- and

paraclinical departments should be removed in view of the critical shortage in these areas. All distinctions between MSc in the faculty of medicine or science should be abolished. In fact, in many foreign countries pre- and to some extent paraclinical teaching is performed almost exclusively by non-medical personnel.

11. Since many postgraduate seats in pre- and paraclinical departments remain vacant with no takers from the MB,BS category, special efforts must be made to start courses in non-medical Masters degree (MSc) in these subjects in medical colleges to overcome the manpower shortage not only for future appointments as medical college teachers but also for current utilization for MB,BS teaching in practical classes or demonstrations or small group teaching activities.
12. The permitted intake of postgraduate students in different departments must be rationalized. The 1:1 postgraduate teacher:student ratio while being quite appropriate in surgical disciplines, has no meaning in subjects such as Anatomy, Forensic Medicine, Biochemistry, Pathology, etc. One postgraduate teacher can certainly have more than one postgraduate student in these departments and can train them quite efficiently. If this is done, it will serve as a long term correction measure.
13. Any candidate who has been recruited as a faculty member should within 6–12 months take a course on modern teaching–learning technology through recognized centres or in distance education mode before being confirmed in the post.

14. Manpower planning needs to be taken up with long term perspectives on an urgent basis at the national level.

If some or all of these measures are not considered, discussed, debated, acted upon or implemented urgently, it is very likely that what is now a major problem of shortage of teachers will become critical in a few years and bring the system to a grinding halt. There needs to be a national debate on the issue. The MCI guidelines for teacher eligibility, while being well thought out measures directed towards excellence in medical education, need revision in the current scenario of mushrooming medical colleges to overcome the crisis.

Radical measures are called for since it is highly unlikely, if not impossible, that with the currently available number of fresh postgraduate degree holders in different subjects and with the lack of attraction to the teaching profession among many of these outgoing postgraduates, the problem would ever get solved on its own. The ultimate damage would, of course, be to the medical education system in the country. Discussion and consensus among educationists is the way forward.

REFERENCES

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