

▼ REVIEW

STATUS OF RADIOLOGY TEACHING AT UNDERGRADUATE LEVEL

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Radiology is one of the fastest growing specialties in medicine. Thanks to the phenomenal growth in imaging techniques and emergence of diagnostics, clinical practitioners have become more and more reliant on these modalities to arrive at the diagnosis accurately. Most specialists refer patients for radiological investigations with a provisional diagnosis. Their interest lies in either validating the diagnosis or ruling out the possibility. Ultimately, radiology helps in clinching the final diagnosis.¹ In some cases radiological findings help in monitoring the treatment. Health experts therefore trust radiology more than any other discipline in patient care. It has been acknowledged that medical students with interpretative skills in radiology have enhanced their skills of clinical examination and self-confidence in arriving at diagnosis². There is no doubt that basics in radiology are crucial for comprehension of images.

As a result of the prestige attached to this specialty, there is a craving amongst the MBBS graduates for securing postgraduate seats in Radiology, either to set up a high-tech hospital or a diagnostic facility, or to become specialist in this field to remain in the forefront of medical profession. In this paper, we examine the various facets of undergraduate training in radiology globally and extrapolate the same to Indian context.

RADIOLOGY TEACHING – GLOBAL SCENARIO

Though radiology as a specialty is advancing by leaps and bounds, the teaching and training in radiology have not received due attention. Even in the U.S., training has been found to be inadequate.³ While the training in medicine, surgery and obstetrics has made significant strides globally, radiology training has been lacking. A review has shown that less than 25% of medical graduates are confident in interpretation of chest x-rays, which is considered as a basic skill for a radiologist.⁴ Another study has indicated that students did not master basic skills of radiology even during their clinical clerkship.⁵ Nevertheless, the studies have led to the increased awareness about the importance of promoting training in radiology. Progressive medical colleges in the U.S. have started exploring new pathways of integrating radiology in the main stream of medical education.⁶

D mytriw et al, conducted a survey at Dalhousie University, Mc-Gill University, and University of Toronto. Most of the respondents (91%) were of the opinion that radiology is essential for better care of the patients. While 98% conveyed significance of radiology in efficiency of treatment, 83% opined the shortfall of radiology education in medical college curriculum. The authors believe that it is essential for any medical graduate to know the view of the x-ray taken, basic densities, few normal anatomic structures, and findings of common pathologies to improve the skills of physicians.⁷

Bhogal et al in their comprehensive review came out with the following observations: a) Knowledge of clinical radiology, is presently vital to the management of patients. b) Radiology teaching helps the newly graduated doctors to have the knowledge, skills and attitudes for better competence. c) It also aids in building on this knowledge in their post-graduation years. d) A good groundwork in radiology is critical to clinical medicine. e) It will result in added efficiency in healthcare. f) All these will help in saving time, reducing redundant tests, decreasing harm to patients, and effective sharing of resources⁸

European Society of Radiology (ESR) conducted a survey of teaching staff and heads of teaching hospitals of 430 European education centers to assess undergraduate teaching in Europe. Based on the survey, ESR has brought a white paper. It has been suggested that radiology training should start early and the syllabus should be integrated with the general program. While teaching may be embedded in the Department of Radiology, it has been emphasized that a close communication between radiology and clinical subspecialty must be maintained for an effective teaching to occur in a clinical context. This helps the students to establish clinical correlation which is vital for perceiving the relevance of training.⁹

Another survey was conducted in the U.S. by the Alliance of Medical Student Educators in Radiology (AMSER) who reiterated that imaging was pivotal for practice of modern medicine.¹⁰ Lee et al., of University of British Columbia reported that students were benefitted from radiology training during a first curriculum year¹¹ Therefore a case is made for early introduction of radiology. However, a curriculum with integrated teaching in radiology is considered academically valuable.¹² Assessment in radiology is essential as it motivates students to take training earnestly¹³. Assessment can be done during the clinical years by interconnecting the x-ray images and the diseases.¹⁴

Drawing conclusions from a national survey of medical schools and radiology department leadership in the U.S., Straus et al offer three solutions, viz., a) to expose students to interdisciplinary meetings, b) to make digital sources of images extensively available for the training and c) to develop a common standardized curriculum¹⁵.

INDIAN SCENARIO

India witnessed a rapid expansion in the number of medical colleges as well as the enrolment of students for undergraduate (MBBS) and postgraduate (MD/MS) courses. Presently we have more than 412 recognized medical colleges, admitting 52,965 for MBBS and 22,850 for MD/MS every year.¹⁶ There is perceived shortage of teachers for the MBBS programs in many departments, including Radio-diagnosis in which adequate number of PG trainers are not available. A study has reported that the ratio of radiologists to population in India is 1: 100,000 in comparison with 1: 10,000 found in the US. This points to the need for more number of specialists in radiology. Presently the top-level students with MBBS prefer to pursue MD in radiology.¹⁷

The curriculum in undergraduate radiology, like many other subjects has followed the conventional mode of 'disciplinary approach'. The Medical Council of India (MCI) is the regulatory body that prescribes curricula of medical colleges. The teaching and assessment in radio-diagnosis are therefore, largely generally governed by the MCI Regulations of 1997.¹⁸ However, Universities being examining bodies have other sets of regulations for the assessment and examination for their affiliated medical schools. Hence there is no uniformity in the standard of medical education across the country¹⁹. This holds good for radiology. The problem is further vitiated by the fact that the pattern of teaching varies from teacher to teacher depending upon his/her training background.

It is well known fact that assessment drives student learning. Students and faculty invest more time and effort where assessment weightage is high. Unfortunately, radio-diagnosis is a small part of surgical training and is assessed under Paper II of General Surgery which includes general surgery, anesthesiology, dentistry in addition to radio-diagnosis. According to MCI Regulations, training in radio-diagnosis consists of 20 hours of didactic lectures besides 2 weeks posting (each posting is of 3 hours duration) during 7th semester. Radiology can also be offered as one of the electives during clinical phase. However, since no detailed guidelines are available for teaching these electives, the training appears to be unstructured and variable in quality. The weightage given to radiology in assessment is not in commensurate with the current emphasis given to this subject. The examiners in Surgery and

Medicine usually throw a few questions asking the students to interpret a given X-Ray, as a part of viva examination.

The assessment system in general has followed traditional approach of written examination, practical, long/short case with viva exam. However, a recent development is the introduction of OSCEs as either formative or in some cases summative examination. OSCE approach has been considered as an objective and fair way of examining clinical, procedural and interpretive skills. This has enabled the assessment of radiology competencies, especially interpretation of X-Ray, ECG and other image data to assess the candidates' skills in interpretation and problem solving.

Future efforts to improve radiology training should revolve around the use of problem solving approaches and case based learning. The availability of digital technology and Picture Archival Communicating System (PACS) can help in a big way. Integrated teaching of radiology is another important way forward. This requires a concerted effort, vibrant leadership and team work amongst faculty. Some of the progressive

medical colleges including MGMCRI, Pondicherry have taken up keen initiative in this direction thanks to the support from top leadership and management. While a broad outline of the curriculum is already in place, the investment on faculty development can make a huge difference in the successful implementation of the curriculum.

In conclusion, we observe that a lot more efforts are needed for revitalizing the teaching of radiology. While an integrated approach to the teaching with participation from clinical disciplines is a value addition to the training, the use of interactive teaching utilizing problem solving exercises drawn from a pool of real cases and their images would be a minimum requirement. This also calls for more research evidence to show that the new methodologies are feasible, student-friendly and helpful in achieving better learning outcomes. The first author is currently involved in conducting a longitudinal study focusing on the UG Department of Radiology MGMCRI and some of the initial outcomes are positive. There is no wonder if radiology teaching soon occupies the main stream of undergraduate teaching.

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