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M. Neelam Kachhap does a critical analysis of education in radiology, with industry inputs from industry experts, and finds that lot more needs to be done in this area to be at par with the growing advancements in the sector

Radiology in India is booming. Radiographic technology has seen rapid development in the past two decades. The imaging that began with one modality, X-ray, has evolved into more complex ultrasound, Doppler, CT, MRI, etc., to PET-CT and PET-MRI. Everyday, new advancements in these modalities are reported.

This has resulted in the increase in not only in-house radiology departments, both in private and public sector hospitals, but also in standalone diagnostic imaging centres. Unfortunately, the growth of human resources for diagnostic and image interpretation services in radiology is not keeping pace with the growth in the number of machines and centres that are budding in the country. Although it is good that radiology is a highly competitive postgraduate degree today and attracts the best medical graduates, availability of teaching hospitals and centres is a cause of concern. This, coupled with anecdotal stories about high capitation fee for PG seats, paint a bleak picture of radiology education in India. Further, the standard of teaching may not be uniform across India.



“The standard of radiology training in India is not the same across all hospitals. There are government colleges and private centres doing phenomenal work in radiology, but training is far from adequate,” laments Dr S Radhesh, Chief Radiologist, Medall Healthcare, Bangalore.

Agreeing, Dr Deepon Patel, Head- Dept Of Radiology, Bhatia Hospital, Mumbai says, “There are significant differences in the level of training in urban and rural areas with respect to training in the newer modalities e.g. Colour Doppler, CT, MRI and Interventional Radiology.”

Training in India

However, they both agree that radiology and imaging training in India is on the ascendent. In fact, the teaching has also evolved but the pace has been slow. “The good news is that the standard of radiology training in India has significantly improved since the time I was a PG,” says Arjun Kalyanpur, CEO/Chief Radiologist, Teleradiology Solutions, Bangalore. “In the 1980’s when I was doing my radiology residency at AIIMS, there were very few programmes that gave PGs exposure to MRI or even CT. Most government medical colleges which conducted training programmes had neither of these, and so the residents had to typically travel great distances in rotations at private centres where they would obtain very limited CT or MRI experience as an observer. Most radiology graduates in those days learned conventional radiology and ultrasound thoroughly, and the rest was learned from books and journals (centres such as AIIMS which had state-of-the-art equipment were of course an exception),” he explains.

“Expecting a radiologist today to master all of radiology is akin to expecting a general practitioner to practice everything from ophthalmology to cardiac surgery.”



Arjun Kalyanpur
CEO/ Chief Radiologist, Teleradiology Solutions, Bangalore

DMRD or MD radiology

And then there is the age old dilemma whether the students should opt for DMRD or MD Radiology or DMRD+DNB. Like the ‘chicken and the egg’ problem there is no right answer to this dilemma. It is a sensitive issue and most radiologists feel strongly about it. Yet, they don’t like to discuss it in an open forum. Many radiology practitioners opine that MD is better than DMRD as preference at the time of teaching recruitment is given to the former. However, there are others who believe that DMRD is the route to quick certification and therefore the quicker road to practice. “Definitely MD or DNB since the course is of longer duration and ensures better grounding and conceptual clarity. And like everything else one becomes better only with time and experience,” opines Dr Patel.

In fact, the difference between these two courses is in the duration of the course and the exposure to the subject matter.

But DNB qualification is the minimum requirement for applying to private hospitals in India and many foreign countries where radiologists migrate for monetary reasons. "DNB (Diplomate of National Board) is accepted all throughout India and outside India as well," informs Dr Patel.

A section of practitioners feel that the question is redundant as experience, and not qualifications, matter. They feel that there are many DMRD candidates who are good, perhaps even better than MD candidates but do not get the preference MDs enjoy. Some also question the purpose of having two degrees and suggest instituting only one of them.

"I think this debate is irrelevant," says Dr Kalyanpur. "What matters is that the Boards follow uniformity and fairness in assessing the candidates, and that the criteria for passing are neither too lax nor too stringent, either of which can currently be the case. The goal should be to assess for competence and not for impossible brilliance," he adds. He further explains that having a very high failure rate, as has been the case in the past, does not help the situation, as radiologists who are competent and could be productive members of the medical community end up wasting a lot of time retaking their exams, which does not necessarily translate into increased competence, and can significantly affect the confidence and morale of an individual candidate.

"For a population of 1.2 billion in India, the patient to radiologist ratio is far from adequate. Medical Council of India (MCI) and Diplomate of National Board (DipNB) should be liberal in radiology training, hence, there is a need to increase the number of radiology seats," says Dr Radhesh.

Need for sub-specialisation

The field of radio-diagnosis has evolved so much that today sub-specialisation has become a necessity. "Expecting a radiologist today to master all of radiology is akin to expecting a general practitioner to practice everything from ophthalmology to cardiac surgery! The field has become truly vast and complex. Sub-specialisation therefore allows a radiologist to focus on a clinical sub-specialty such as neuro, cardiac or paediatric radiology and achieves a higher level of expertise than a general radiologist can possibly achieve," explains Dr Kalyanpur.

Adding to this Dr Kapoor says, "It is virtually impossible today to remain a radiologist with competence in all areas of speciality. For example, if an individual specialise in interventional radiology, then sub-specialist training is needed to gain deeper knowledge, new techniques and practical experience to provide a high level of clinical service."

In India, the sub-specialisation trend is yet to catch-up. "Sub-specialisation in India has a long way to go. In a country like India where it is difficult to find radiologists and more so radiologists to reach out to Tier-II and Tier-III cities, specialisation has taken a back seat. Radiologists in India are by and large modality specific, specialised in Ultrasound, CT and MRI than organ specific," laments Dr Radhesh.

"Sub-speciality focussed (as opposed to the traditional modality focussed) radiology training is important for radiologists to develop a better clinical understanding and learn to communicate more effectively with their clinical counterparts. Sub-speciality (or fellowship) training is important to allow radiologists to live and breathe their sub-speciality in an intense clinical environment and be able to practice it at the highest level," says Dr Kalyanpur.

"Having said this, the role of a good general radiologist in a country like India cannot be overemphasised. Given the shortage of radiologists we face, it is necessary for radiologists to be able to multi-task effectively. Especially in the emergency setting, an understanding of imaging in acute care scenarios spanning all sub-specialities can truly impact patient care," he sums up.

Continued Medical Education (CME)

CMEs are a part of the growth of any medical practitioner. MCI suggested that every doctor should regularly participate in CME activities, 30 credit hours every five years. It is mandatory for doctors to have 30 credit hours for re-registration with the medical council of some states. These CMEs are conducted by various associations and private groups and hospitals. The radiology CME scene in India is dynamic. "CME programmes in radiology are being conducted in India by private groups and hospitals. These programmes help in increasing the awareness of newer modalities in radiology and also help interpret the patient information. CME credits are encouraging doctors including radiologists to attend CME's and conferences," informs Dr Radhesh.

"CME scene in India is booming!" says Dr Kalyanpur. "There are a number of CME courses in radiology now across the country and new ones are coming up literally every week. The traditional CME courses such as those conducted by state radiology associations were all-encompassing and general in their content; however, the recent trend is for sub-speciality focused CME on subjects such as foetal medicine, musculoskeletal ultrasound, and the like which is a positive trend. At our centre, Radgurukul, we have conducted sub-speciality CME training in emergency radiology, cardiac imaging and imaging in clinical trials, all of which have been well received," he explains.

Some of these CMEs are more popular than others and attract many participants from across the country. "The most popular courses for CME are offered by Indian Radiological and Imaging Association (IRIA), Radiological Society of North America (RSNA) and International Society of Ultrasound in Obstetrics and Gynaecology (ISUOG)," says Dr Kapoor.

Agreeing Dr Patel says, "Modality specific CME courses, with emphasis on problem solving of diagnostic dilemmas in routine clinical practice are popular. Some of these are CUSP, Ultrafast, USKON, Annual IRIA conferences etc."

However, on a slightly lighter note, Dr Kalyanpur disagrees saying, "The most popular courses tend to be the ones which package a beach (or other) vacation along with CME, such as the Spiral CT conference in Goa. These allow radiologists to party as well as to partake of learning, if they should be so inclined."

New age learning tools

Stiff competition in the field has led radiologists to explore newer methods of learning and Internet is one powerful too in this regards. From teaching websites to case libraries to e-lectures and live reading sessions, technology is aiding learning in many ways. "E-learning, in the form of an online portal such as our Cisco driven teaching portal is a powerful tool in an era of radiologist (and particularly teacher) shortages," says Dr Kalyanpur. "Using an e-learning platform enables the teacher to greatly extend their reach to a nationwide audience simultaneously, using a simple laptop and web camera. It also makes sense for postgraduates who can attend such sessions from their homes or duty rooms, after the day's work has ended without having to commute long distances," he adds. YouTube is an effective tool for radiology training as well and several

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Dr S Radhesh

Chief Radiologist, Medall Healthcare, Bangalore



of our e-lectures can be accessed on youtube (www.youtube.com/trsradiology) Teaching websites such as our teaching website (www.radguru.net) also contain case reference material and learning content that can be extremely useful to radiology postgraduates and even practising radiologists during their workday. "Online websites like Pubmed, Medscape, auntminnie.com, learningradiology.com, radiologyassistant.nl, etc. are also helpful," says Dr Patel.

Areas of improvement

Presently, availability of equipment may not be the problem but availability of teachers may need some serious thought. "Today, the government hospitals are much better equipped and many private diagnostic centres conducting DNB training have state of the art imaging equipment, so certainly the level of exposure to these modalities is significantly higher now. The challenge today is radiologist and especially teaching radiologist shortages," says Dr Kalyanpur. "In many hospitals the radiologists are too busy to teach, and so the training suffers, and residents simply learn on the job by observing their seniors and peers, rather than with focussed didactic training and conferences," he explains.

Further, there is growing concern that fresh radiologist on-the-block are not interested in reading simple X-rays. "With new technologies now becoming available, the radiology postgraduates of today are getting very well trained in cross-sectional imaging, namely ultrasound, CT and MRI.

However, ironically what is now suffering as a result is training in plain film interpretation, which has taken a back seat as in many teaching hospitals the x-rays do not end up being reported at all but are simply despatched to the clinical services for review by the ordering clinicians. The fresh graduates of today are lacking in plain film interpretation skills, and this forms the basis for a major potential area of improvement," elaborates Dr Kalyanpur.

In addition to evolving technology the field of medicine itself is advancing rapidly and radiologists are expected to understand and know about newer disease and clinical symptoms, findings to be able to aid the clinician. "Today radiology covers variety of diseases at all age groups; from the foetus to the multi-morbid aging population, from prostate to the pituitary gland etc. No single person can master all the available knowledge," says Dr Nikhil Kapoor, HOD, Moolchand Imaging Centre, Moolchand Medcity, and New Delhi.

"However, physicians need a clinical interaction with the imaging specialist. In order to create added value for the referring clinician, the radiologist must fully understand the clinical problem. The radiologist is expected to be able to do this at a different level and for all medical specialities. Therefore clinical experience is required before embarking training in imaging, and appropriate training in specific clinical specialities may also be needed," he explains. "Radiology should be able to change their attitudes and adapt new modules of professional training to keep a pace with the dramatic revolution and evolution of radiology," he further adds.

Agreeing Dr Kalyanpur says, "Radiology residents need to be taught to think and analyse their observations, tying them into a clinically relevant and concise differential diagnosis. While our radiology education system trains PGs in detecting findings, especially radiologic signs, the second and equally important thought process of tying disparate findings into a coherent diagnosis is a skill which I for one learned only during my residency in the US."

In terms of training, the current training system could be improved if the exams would shift their focus from theoretical spotting to practical relevance. "Instead of having an examination system that is focussed on testing students on their ability to rare and esoteric disease entities in the form of spotters, it is important to focus on practical relevance and competence in evaluation of common clinical entities where radiology can today contribute to better patient outcomes. Standardising the examination process across the country is of importance," opines Dr Kalyanpur.

Adding to this, he says that training radiologists to develop good communication skills is a key area of improvement. 50 per cent of radiology lies in effective communication of the results to the clinician, which includes the ability to convey effectively the degree of certainty or uncertainty, and to recommend appropriate follow up and to guide the course of subsequent management. Similarly soft skills training, focussed on making radiologists capable of reassuring concerned patients, communicating critical findings with sensitivity (as in screening mammography) should also be focus areas of improvement in radiology postgraduate training.

"The training goal today should be to develop radiologists who are technologically competent to deal with the current electronic work environment, i.e. who are familiar with PACS, Teleradiology, voice recognition, structured reporting and the tools that enhance radiologist productivity and efficiency," he concludes.

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