

The current status of pediatric radiology in India: A conference-based survey

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Abstract

Introduction: Like most other developing countries, India has a large proportion of children among its population. However, the facilities for adequate treatment of this large population is inadequate. The development of pediatric radiology as a subspecialty is still at an infant stage in India. The goal of our study was to assess the awareness about the current status of pediatric radiology in India. **Materials and Methods:** A questionnaire was handed over to all attendees of a pediatric radiology conference to assess their opinion regarding the adequacy of pediatric training and practice in India. The questionnaire consisted of 10 multiple-choice and two descriptive questions. Descriptive statistical methods were used for analyzing the results. **Results:** Eighty-one out of 400 delegates responded to the questionnaire. Among these 81 respondents, 50 (61.7%) felt that exposure to pediatric cases during postgraduate course was inadequate. Sixty-three out of 81 (77.7%) respondents thought that specialized training is required for practicing pediatric radiology, and 79 respondents (97%) felt that the number of such training programmes should increase. Forty-five out of 81 respondents (55.5%) were interested in pursuing pediatric radiology as a career. **Conclusion:** According to the opinion of the respondents of our survey, pediatric radiology remains an underdeveloped speciality in India. Considering the proportion of the population in the pediatric age and the poor health indicators in this age group, elaborate measures, as suggested, need to be implemented to improve pediatric radiology training and the care of sick children in India.

Key words: Pediatric radiology; pediatric radiology fellowship; questionnaire; subspecialty

Introduction

India is a demographically young country with the largest pediatric population in the world.^[1,2] For this large population, the healthcare facilities are woefully inadequate as suggested by the low (4.7% of GDP) expenditure on healthcare compared to developed countries such as United States (17.1%) and United Kingdom (9.1%).^[3,4] A side-by-side development of primary care facilities and tertiary capabilities is mandatory if we are to improve our unenviable position as the country with the largest

number of under 5 mortality in the world.^[5] Over the past years, we have gradually developed most of the pediatric sub-specialties such as pediatric surgery, pediatric cardiology, and pediatric neurology. Today, these have formal university recognized training programs which are a vital key to developing a new specialty. Unfortunately, this kind of attention has not been given to pediatric radiology which continues to lag behind. To our knowledge, there are only two institutes offering pediatric radiology training programs, both of which are not recognized by the Medical

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Council of India. Furthermore, even internationally, the demand for pediatric radiology courses are low among radiologists because of perceived disadvantages compared to other subspecialties.^[6-9] These include lack of adequate training, smaller financial incentives compared to other subspecialties, and perceived difficulty in handling young children.^[8] According to Arshdeep Sidhu *et al.*, most of the radiology residents in India had less than 2 weeks of exposure to pediatric subspecialty during their training.^[10] As a result of these factors, few young radiologists consider pediatric radiology as a career choice.

The purpose of our study was to evaluate the awareness of the delegates attending the annual national conference of the Indian Society of Pediatric Radiology regarding the current status of pediatric radiology in India. This group consisted of practicing radiologists as well as postgraduate trainees with interest in pediatric radiology.

Participants and Methods

The national conference of the Indian Society of Pediatric Radiology was conducted at a tertiary care institution in India. It was attended by 400 delegates from all over the country. An academic workshop on "Pediatric Radiology - Learning Opportunities in India" was conducted on day 1 as a parallel session for 2 hours, including eminent panelists from Canada, Australia, and India. A questionnaire [Appendix 1] prepared with the help of the Bio-statistics department was distributed to all the delegates. A hard copy was given to all delegates at the time of registration of the conference and their responses were collected at the end of the conference. Similarly, a soft copy format was also circulated through email after the conference. Consent for publication was obtained from all the respondents. The questionnaire consisted of 12 questions; 10 questions were in the multiple-choice question format, while in 2 questions, attendees were asked about their opinion. The questionnaire was designed to assess the attitude of the delegates towards the relevance of pediatric radiology as a subspecialty and the need for pediatric radiology fellowship programs. Descriptive statistical methods were used for analyzing the results.

Results

Out of 400 delegates who attended the conference, 81 replied to the questionnaire. Out of these 81 respondents, 41 (50.6%) were postgraduate students and 33 (40.7%) were consultants in radiology. Five were radiology fellows and 2 were nonradiology consultants. Fifty of the 81 respondents (61.7%) said that exposure to pediatric cases during postgraduate course was inadequate [Figure 1]. Only 11 out of 81 respondents felt that there is no need to develop pediatric radiology as a subspecialty. Sixty-three out of 81 respondents thought that pediatric radiology fellowship is a must for pursuing a career in pediatric radiology. An

overwhelming majority (79 out of 81 respondents) was in favor of increasing the number of fellowship programs in the country. Similarly, 77 out of 81 respondents (95%) felt that scholarship programs should be instituted for promising radiologists with an interest in pediatric radiology. Regarding the duration of the course, 53 (65%) of the respondents felt that it should be one year, while 13 (16%) felt it should be 2 years, and the remaining (15%) preferred a duration of 6 months. Forty-five out of 81 respondents (56%) were interested in pursuing pediatric radiology as a career. Forty-six of the 81 respondents (58%) knew about the existence of specialty pediatric hospitals in India, whereas 52 out of 81 (65%) knew about a dedicated pediatric radiology fellowship program in India.

The questions regarding the need for promotion of pediatric radiology and the disadvantages of pursuing pediatric radiology as a career choice required textual answers and the responses reflected both the opportunities and challenges of advancing pediatric radiology as a subspecialty [Table 1].

Discussion

Pediatric radiology is a young subspecialty in India and has been in the throes of growth pains for quite some time now.

Table 1a: Responses to question on the need for promotion of pediatric radiology as a subspecialty

1. The differences in diseases affecting children and adults
2. Concerns regarding unnecessary radiation
3. Need for better clinical involvement
4. The inability of a single radiologist to master all specialities within radiology

Table 1b: Responses to question regarding the disadvantages of pursuing pediatric radiology as a career choice

1. Perceived lack of job opportunities
2. Less pay and prestige compared to other subspecialties
3. Lack of adequate training centres and faculty
4. Apprehensive about handling children

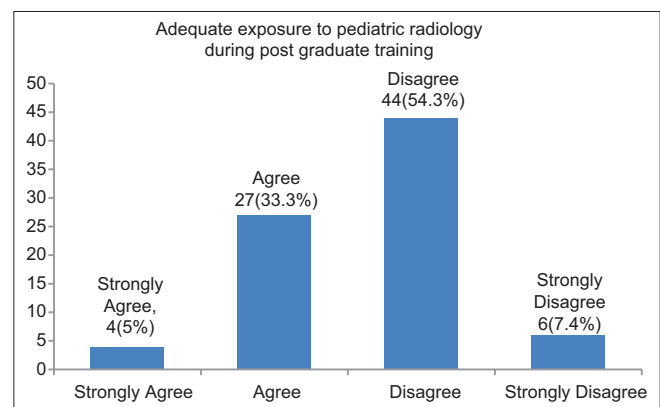


Figure 1: Graph showing response to question regarding adequacy of exposure to pediatric radiology during postgraduate training

The matter was first brought to academic interest in 2010 in an editorial published in Indian Journal of Radiology and Imaging.^[11] It shed light on clinician and trainee perspectives regarding the contemporary state of pediatric radiology in India. This was followed by a mini-symposium published in Pediatric Radiology in 2014 based on a collaborative effort by national and international faculty aimed to conduct a needs assessment evaluating the adequacy of pediatric radiology in India as well as to establish a pediatric radiology education program in India.^[10] This study highlighted the inadequacies of pediatric radiology training and practice in India. A number of pediatric radiology training programs were conducted with the help of the funding procured as part of the above program.

In India, most practicing pediatric radiologists are informally trained within the country with cumulative experience in the field, and few have completed a formal fellowship program overseas. However, most of the pediatric imaging is reported by general radiologists as well as modality or system specialists. There is need for dedicated pediatric radiologists due to the fact that children have different disease spectrum, many of which are age-specific, ranging from intrauterine fetus to young adult. Because of growing body organs, normal imaging appearances of some organs (for e.g. brain or bones) may differ significantly from those of an adult. For untrained eyes, it may be difficult to find out an abnormality, or they may misinterpret normal variants as abnormality.^[12,13] Children are thus not to be considered as small adults.

Sedation or general anesthesia is one of the important aspects of imaging infants and young children, which has its own hazard.^[14] Young children especially infants are more prone for hypothermia and other complications of anaesthesia. Similarly, a radiologist with expertise in pediatric radiology will definitely be useful in curtailing unnecessary investigations, especially imaging involving ionizing radiation.^[15-17] Possibly more patience and ability to interact with parents are also required.

Internationally, the need for increased subspecialized practise is brought home by the projected increase in the volumes of radiology examinations in the future, based on the report of the Advisory Board Company.^[18] According to their projections there will be an 8% and 17% increase in the number of pediatric MRI and USG examinations over the period of 2014 to 2024. However, the number of pediatric CT studies are expected to go down in response to the "Image Gently" campaign.

The results of our study show that majority of the respondents felt that there is a lot of room for improvement for pediatric radiology training. Similarly, an overwhelming majority felt that pediatric radiology should be developed as a separate subspecialty and that subspecialty fellowship

training is a must for maintaining adequate professional standards. The discrepancy between the apparent enthusiasm of the delegates for subspecialty training and practice, and the inadequacy of both these in the country could be due to a couple of reasons. First, there is a fear of lack of adequately recognized (which could translate as appropriately compensated) job opportunities in the public as well as private sector within the country. Another reason could be that any new subspecialty will take some time to establish itself and that we can expect the rate of progress to improve in the future.

The fact that 56% of the respondents were interested in following pediatric radiology as a career is encouraging and can be taken as a sign of changing attitudes. The challenge is to meet these expectations by increasing the opportunities for subspecialty training in India.

It was disheartening to see that even in a pediatric radiology conference only a slight majority of the respondents knew about the existence of dedicated pediatric hospitals and dedicated pediatric fellowship training programs in India. There is obviously a clear need for increased visibility of the existing programs, dedicated hospitals, and job opportunities.

So, what are the ways to improve pediatric radiology in India?

An important step would be to increase the awareness of pediatric radiology among postgraduates, which can be achieved by increasing the duration of exposure during the training period. Colleges and hospitals without dedicated pediatric radiologists or adequate pediatric work load should send their residents to larger institutes or hospitals for subspecialty posting, similar to the arrangement for interventional radiology. Increased exposure of the general radiologist to pediatric radiology is also important because in a large country like India, bulk of routine pediatric radiology practice will be performed by them even if adequate specialists are available for referral services.^[19]

The Indian Society of Pediatric Radiology (ISPR), established in 2003, has played an invaluable role in bringing together and supporting the fledging group of pediatric radiologists in India.^[20] The yearly national conferences and mid-term CMEs conducted in different parts of India have been well attended and played an important role in advancing pediatric radiology training and practice. ISPR and other national radiology organizations can play an important role in increasing the number of fellowship programmes.

Already these efforts have resulted in successful running of the fellowship program in tertiary institutes. At present, two institutes (Christian Medical College, Vellore and Post Graduate Institute, Chandigarh) are offering fellowship

in pediatric radiology in India. Similar to undergraduate and postgraduate training, there is a necessity for new fellowship programmes to be recognized by the state universities and MCI so that their academic credibility is established.

Various international societies such as the Society of Pediatric Radiology (SPR),^[21] Radiological Society of North America (RSNA),^[22] and European Society of Radiology (ESR)^[23] are offering travel fellowships for young radiologists to visit various well-known universities and conferences. Similar scholarships should be established on a national level to encourage young radiologists.

Pediatric hospitals can be encouraged and educated about the need for investment in adequate infrastructure for radiology department. Hospital administrators and other clinicians need to understand the importance of dedicated pediatric radiologists, as well as technologists and physicists. Knowledge regarding safe imaging of children, especially radiation-related aspects, would be better appreciated in hospitals with large pediatric imaging work load and those with ongoing fellowship programs.

Overall, the survey provided us with cross-sectional data of the radiologists' opinion regarding the status of pediatric radiology. The limitation of this study included potential bias toward the subject, as all the participants were the delegates of a pediatric radiology conference and constituted a relatively small sample size.

Conclusion

Considering the proportion of the population in the pediatric age and the poor health indicators in this age group, there is a need for growth of pediatric radiology along with other pediatric specialties. As is evident from this study, pediatric radiology in India remains under developed. Elaborate measures as suggested should be implemented to improve pediatric radiology training and the care of sick children in India.

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Conflicts of interest

There are no conflicts of interest.

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Appendix 1

Questionnaire regarding the current status of pediatric radiology in India

1. My details -- Post graduate student/Fellow/Consultant
Speciality- Radiology/_____
If consultant, where do you work--- Teaching institute/clinical practice
2. The exposure to pediatric cases during post graduate training is adequate
a. Strongly agree b. Agree c. Disagree d. Strongly disagree
3. Developing pediatric radiology as a sub speciality is **NOT** required
a. Strongly agree b. Agree c. Disagree d. Strongly disagree
4. Pediatric radiology fellowship is a must for pursuing a career in pediatric radiology
a. Strongly agree b. Agree c. Disagree d. Strongly disagree
5. The number of pediatric radiology fellowship programmes in India should be increased
a. Strongly agree b. Agree c. Disagree d. Strongly disagree
6. Scholarship programmes should be instituted for promising radiologists interested in pediatric radiology to pursue subspecialty training
a. Strongly agree b. Agree c. Disagree d. Strongly disagree
7. What should be the duration of a pediatric radiology fellowship -6 months/one year/two years?
8. What, in your opinion, are the reasons why pediatric radiology as sub speciality should be promoted?
9. What are the disadvantages you feel in taking pediatric radiology as a career for a radiologist?
10. Are you interested in pursuing pediatric radiology as a career – Y/N?
11. Are you aware of pediatric radiology fellowships in India -- Y/N?
12. Are you aware of dedicated pediatric hospitals in India? ---Y/N