

Original Research Article

# Knowledge, Attitude and Practice of Radiology among Medical Students at Sree Mookambika Institute of Medical Sciences

S. Vinod<sup>1</sup>, Prashant V Solanke<sup>2</sup>

<sup>1</sup>Assistant Professor of Radiology, <sup>2</sup>Professor of Community Medicine, Sree Mookambika Institute of Medical Sciences, Kulasekharam, District Kanyakumari, Tamil Nadu, India.

Corresponding Author: Prashant V Solanke

Received: 02/02/2016

Revised: 09/02/2016

Accepted: 10/02/2016

## ABSTRACT

**Background:** Radiologists use a variety of imaging techniques such as X-ray radiography, ultrasound, computed tomography (CT), nuclear medicine including positron emission tomography (PET), and magnetic resonance imaging (MRI) to diagnose and/or treat diseases. Medical imaging is the technique and process of creating visual representations of the interior of a body for clinical analysis and medical intervention, as well as visual representation of the function of some organs or tissues (physiology).

**Objective:** To study knowledge, attitude & practice about radiology among students of Sree Mookambika Institute of medical sciences.

**Methodology:** It is a cross sectional study at Sree Mookambika Institute of Medical Sciences, Kulasekharam, Kanyakumari done during June & July 2015. Sample Size is 124. Sampling Technique was convenient sampling. Those who are in medical college more than 6 months were included. Data were entered in Excel spreadsheet, Chi square is used and analysed using SPSS trial version 16.0.

**Result:** The mean age was 21.48±2.88 years. 71 students had correct knowledge of radiology, while 49 students had incorrect knowledge of radiology. The knowledge of the imaging modalities in radiology showed that only 19 students listed 6 imaging modalities, with majority 52 listing 4 imaging modalities. Of the students liked radiology as a specialty in medicine (103) and 16 students did not. Males are seen to have more interest in radiology as a subject 79 than females that had 36 students. Overall, 70 of males have interest in radiology compared to those that don't have interest in radiology 9. The result is statistically significant with a p<0.005. 56 % of the females are interested in radiology compared to 13% that are not interested in radiology. Majority of the students had done radiology posting (121) and only three students did not do the posting.

**Conclusions:** This study has clearly shown that awareness of ionizing radiation from diagnostic imaging is lacking among medical students. The knowledge and exposure to IR in medical school is limited.

**Keyword:** Ionizing radiation, medical students, knowledge, and attitude.

## INTRODUCTION

Radiology is a medical specialty that uses imaging to diagnose and treat diseases seen within the body. Radiologists use a variety of imaging techniques such as X-

ray radiography, ultrasound, computed tomography (CT), nuclear medicine including positron emission tomography (PET), and magnetic resonance imaging (MRI) to diagnose and/or treat diseases.

Interventional radiology is the performance of (usually minimally invasive) medical procedures with the guidance of imaging technologies.

The acquisition of medical imaging is usually carried out by the radiographer, often known as a radiologic technologist. Depending on location, the diagnostic radiologist, or reporting radiographer, then interprets or "reads" the images and produces a report of their findings and impression or diagnosis. This report is then transmitted to the physician who ordered the imaging, either routinely or emergently. Imaging exams are stored digitally in the picture archiving and communication system (PACS) where they can be viewed by all members of the healthcare team within the same health system and compared later on with future imaging exams. <sup>(1)</sup>

Medical imaging is the technique and process of creating visual representations of the interior of a body for clinical analysis and medical intervention, as well as visual representation of the function of some organs or tissues (physiology). Medical imaging seeks to reveal internal structures hidden by the skin and bones, as well as to diagnose and treat disease. Medical imaging also establishes a database of normal anatomy and physiology to make it possible to identify abnormalities. Although imaging of removed organs and tissues can be performed for medical reasons, such procedures are usually considered part of pathology instead of medical imaging.

As a discipline and in its widest sense, it is part of biological imaging and incorporates radiology which uses the imaging technologies of X-ray radiography, magnetic resonance imaging, medical ultrasonography or ultrasound, endoscopy, elastography, tactile imaging, thermography, medical photography and nuclear medicine functional imaging techniques as positron emission tomography (PET) and Single-photon emission computed tomography (SPECT). <sup>(2)</sup>

The importance of Radiology in Medical Undergraduate Education has been recognized by the UK Royal College of Radiologists who has established a recommended Radiology teaching curriculum. This can be used as the basis for further development and contains a number of suggested topics including:

1. Demonstration of Normal Anatomy and basic pathology with imaging
2. Radiation Legislation and Patient/Staff Safety
3. Nature and choice of imaging investigations
4. Patient awareness of the test and experience
5. Interaction with Radiology department. <sup>(3)</sup>

**Aim & Objective:** To study knowledge, attitude & practice about radiology among students of Sree Mookambika Institute of medical sciences.

## **MATERIALS AND METHODS**

- ❖ **Study design** - cross sectional study
- ❖ **Study area** - Sree Mookambika Institute of Medical Sciences, Kulasekharam, Kanyakumari.
- ❖ **Study period** – June & July 2015.
- ❖ **Sample size** -n=124  
 $n=4pq/d^2$
- ❖ **Sampling technique** – convenient sampling.
- ❖ **Inclusion criteria** - Those who are in medical college more than 6 months.
- ❖ **Exclusion criteria** - Those who are not willing.
- ❖ **Statistical analysis:** data were entered in Excel spreadsheet, Chi square is used and analysed using SPSS trial version 16.0.
- ❖ Institutional Research Committee and Ethical Committee clearance was obtained prior to the study.

## **RESULTS**

More than half of the preclinical students (71%) and clinical students (22.3%) responded. The minimum age is 20 years and the maximum age was 24years.

The mean age was  $21.48 \pm 2.88$  years. The majority of the students are in the age group of 21-22 years. The age groups of 22-23 and 23-24 have the least students. The sex distribution showed that males were 52 and females were 72. The males were less compared to the numbers of female students.

### **Knowledge about Radiology**

71 students had correct knowledge of radiology, while 49 students had incorrect knowledge of radiology. There was however no response from 4 students. This showed that the students have a good knowledge of radiology. The knowledge of the imaging modalities in radiology showed that only 19 students listed 6 imaging modalities, with majority 52 listing 4 imaging modalities. The lowest frequencies were those that listed one or two imaging modalities. Three students however did not respond. The knowledge of imaging modalities was very poor among the students. The knowledge of the list imaging modalities that are involved with ionizing radiation showed that only 10 students list 4 imaging modalities. 56 students mentioned only two imaging modalities. 11 students did not respond to the question. It is only 27% students indicated their interest in specializing in radiology, whereas 52% of the students had no interest in specializing in radiology. 11 students were undecided and three students did not respond. The reasons given for those that have interest in radiology were many but the majority believes it is an interesting field that is important in management of patients. The least reasons are that the lecturers carried them along and monetary value. Those that said no to specialize in radiology gave various reasons; with most of them saying that they want to specialize in another field 41%. The least response in this group is those that radiology is too demanding. The majority in this group also did not respond 21%. Few students 19% said that the teaching mode was not adequate while 69% believed that the teaching was adequate. 52% students believed that the period for

radiology posting was not adequate and 40% of the students said that the period was adequate. 17.1% of the students said that the numbers of radiologist were not adequate and 75.5% believed that the number of radiologist is adequate. 18% students believed that radiological practice are hazardous and 78% of the students believed that there are adequate means in place to prevent much hazard with practice of radiology. Some students believe that no adequate allowance for the risk of radiation and no technical knowledge how to practice in of radiology.

### **Attitude about Radiology**

A lot of the students liked radiology as a specialty in medicine (103) and 16 students did not. However, 5 students were undecided. Males are seen to have more interest in radiology as a subject 79 than females that had 36 students. Overall, 70 of males have interest in radiology compared to those that don't have interest in radiology 9. The result is statistically significant with a  $p < 0.005$ . 56 % of the females are interested in radiology compared to 13% that are not interested in radiology.

### **Practice about Radiology**

Students had attended three or four dedicated radiology lectures and were considering radiology as a clinical elective. Majority of the students had done radiology posting (121) and only three students did not do the posting.

## **DISCUSSION**

A hundred (29.1%) of them were divided as follows: 90 (26.2%) thought that they were at least moderately confident and 10 (2.9%) thought that they were very confident in their knowledge of ionizing radiation doses, while 51 (14.9%) of them were divided as follows: 14 (4.1%) believed that knowledge of radiation was "not really important," 1 (0.3%) believed that it is "not important at all," and 36 (10.5%) "Do not know if it is important or not."

The radiation dose from a standard chest X-ray was correctly identified by only 47 (13.7%) respondents. Of note, 245

(71.4%) and 254 (79.3%) incorrectly believed that ultrasound and MRI, respectively, emit ionizing radiation or they do not know if they emit radiation or not. <sup>(4)</sup>

Fifty-three percent (55/103) of respondents reported “poor” knowledge of IR and only 18% (19/103) said they would consider a career in IR. Respondents cited lack of knowledge (48%, 37/77) or lack of interest (43%, 33/77) as the main reasons why they would not consider IR as a career. Although 92% (95/103) of respondents could name at least one IR procedure, many (54%, 56/103) were unclear as to the duties of an interventional radiologist within the hospital. <sup>(5)</sup>

We had 288 respondents from a 5 year medical school at a Pakistani medical college; among which 32.6 % (94/288) were in first year, 28.1% (81/288) in their second, 8% (23/288) in third, 23.3 % (67/288) in fourth and 8% (23/288) of respondents in their final year. 39% (112/288) reported poor knowledge, 14.9% (43/288) had no knowledge about the modality with only handful (4%) reported as having excellent knowledge.

Among the respondents 77.4 % (223/288) have not completed or plan to do an elective in radiology. Only 19% said yes when asked to pursue their career in Radiology, 46.5 % said no while 34% were unsure. Only 16 % of our respondents were eager to pursue Interventional Radiology (IR) as their future career.

The most common cause in not pursuing IR as career was that 49 % (141/288) did not know about the modality, 34.7% (100/288) didn't find it interesting and 9% said that the life style doesn't suit them. <sup>(5)</sup>

Nearly 40% of the students accepted that objects in the X-ray room emit radiation after an X-ray procedure and nearly the same percentage agreed that protective measures should be taken while performing an ultrasound and that dangerous radiation is emitted from good quality microwave equipment. <sup>(6)</sup>

The sex distribution showed that males were 82 and females were 42. A lot of the students liked radiology as a specialty in medicine (101) and 19 students did not. The knowledge of radiology among the students was not good. Males are seen to have more interest in radiology as a subject (75) than females that had 26 students. Overall, 75 (92.6%) of males have interest in radiology compared to those that don't have interest in radiology 6(7.4%). The result is statistically significant with a  $p=0.001$ . 26 (66.7%) of the females are interested in radiology compared to 13(33.3%) that are not interested in radiology. It is only 27(21.8%) students indicated their interest in specializing in radiology. 35(28.2%) students believed that radiological practice are hazardous and 34(27.4%) of the students believed that there are adequate means in place to prevent much hazard with practice of radiology. <sup>(7)</sup>

## CONCLUSIONS

This study has clearly shown that awareness of ionizing radiation from diagnostic imaging is lacking among medical students. The knowledge and exposure to IR in medical school is limited.

### **Recommendation**

Early exposure of medical students to IR should be introduced to attract future interventional radiologists as well as increase awareness among future medical students.

### **Limitations**

This is hospital based study. So we can not apply results to general population. As each unit in the study have not get equal chance of selection to be include in this study.

Random sampling technique is not used in this study. That's why statistical significant results cannot be generalized to the population.

**Institutional Ethical Clearance:** Taken.

**Source of funding:** Self

## REFERENCES

1. Wikipedia. Wikipedia The free encyclopedia. [Online].; 2016 [cited 2016 01 01. Available from: <https://en.wikipedia.org/wiki/Radiology>
2. Wikipedia. Medical Imaging. [Online].; 2015 [cited 2016 01 02. Available from: [https://en.wikipedia.org/wiki/Medical\\_imaging](https://en.wikipedia.org/wiki/Medical_imaging)
3. Buirski G. Radiology Education for Undergraduate Medical Students – Current status and Future opportunities. [Online].; 2015 [cited 2016 01 03. Available from: <http://qatar-weill.cornell.edu/cpd/archive/radiology-education-for-undergraduate-medical-students-current-status-and-future.html>.
4. Seife Teferi Dellie, Daniel Admassie, and Yenework Ewnetu, “An Assessment of Final-Year Medical Students and Interns Awareness of Radiation Exposure to Common Diagnostic Imaging Procedures,” Advances in Radiology, vol. 2014, Article ID 426909, 7 pages, 2014. doi:10.1155/2014/426909
5. Lauren O'Malley, Sriharsha Athreya. Awareness and Level of Knowledge of Interventional Radiology among Medical Students at a Canadian Institution, Academic Radiology, Volume 19, Issue 7, 894 - 901
6. Syed Mohammed Mubeen, Qamar Abbas, Nighat Nisar. knowledge about ionising and non-ionising radiation among medical students. [Online].; 2016 [cited 2016 01 04. Available from: <http://www.pubfacts.com/fulltext/19024203/Knowledge-about-ionising-and-non-ionising-radiation-among-medical-students>.
7. Salaam AJ, Danjem SM, Salaam AA - Knowledge Attitude and Practice of Radiology among Final Year Medical Students - published at: "International Journal of Scientific and Research Publications (IJSRP), Volume 6, Issue 1, January 2016.

How to cite this article: Vinod S, Solanke PV, Knowledge, attitude and practice of radiology among medical students at Sree Mookambika institute of medical sciences. Int J Res Rev. 2016; 3(2):37-41.

\*\*\*\*\*

### International Journal of Research & Review (IJRR)

#### Publish your research work in this journal

The International Journal of Research & Review (IJRR) is a multidisciplinary indexed open access double-blind peer-reviewed international journal published by Galore Knowledge Publication Pvt. Ltd. This monthly journal is characterised by rapid publication of reviews, original research and case reports in all areas of research. The details of journal are available on its official website ([www.gkpublication.in](http://www.gkpublication.in)).

Submit your manuscript by email: [gkpublication2014@gmail.com](mailto:gkpublication2014@gmail.com) OR [gkpublication2014@yahoo.com](mailto:gkpublication2014@yahoo.com)