

# Investigating subspecialty Application in Radiology Department - Sohag University

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**Abstract:** Radiology is one of the widest specialties in medicine which including all body parts and systems in its duties and roles either in diagnostic or interventional and therapeutic aim. Subspecialty in medical branches nowadays become a mandatory way for better medical practices and improvement of medical services and procedures quality. Radiology department in Sohag University up till now did not apply a complete system of subspecialty of different doctors' groups in it. This article aimed to investigate the idea and opinions of team work in the department for applying subspecialty in it and helping in the planning for this purpose in the near future.

**Keywords:** Radiology subspecialty, Radiodiagnosis, Radiology branches.

## 1 Introduction

Radiology is one of the widest branches in medicine; its modalities and techniques are related and concerned with almost all body parts and systems which make it in bad need for subspecialty for better practicing. Radiology has many modalities some of them are common and present in almost all hospitals and clinics such like Ultrasound and X ray, others are relatively less available as CT and MRI and others are advanced and seldom as PET CT [1]. Each modality has common techniques and other more advanced techniques that need specific added devices or specific skills (Ex. The usual techniques of MRI as T1 and T2 and other more advanced techniques as DTI "Diffusion Tensor Imaging Tractography"). Radiology is dividing mainly into diagnostic and Interventional, and the interventional techniques are divided into diagnostic and therapeutic techniques [2]. The modalities are serving both branches as they are mainly diagnostic but also used for guiding interventional techniques for both purposes [3]. Radiology department in Sohag university hospital contains many modalities and machines as US, Doppler, X- ray, CT and MRI , most of them is connected to PACS of the hospital . Other new machines are just added in the new hospital in New Sohag city, which adding new techniques as Cardiac CT [4]. PACS and teleradiology can be more helpful in applying subspecialty as it with save time for accessing the required doctor in cretin specialty [5,6]. Applying of subspecialty in any radiology

department will depend on certain factors which are: Number of Doctors, available machines and modalities, the attitude of these members toward the idea of subspecialty and clear system for applying of it, according to these factors the questionnaire of our study were designed. Integrity of PACS is mandatory for proper work in general and for better applying of subspecialty system, many factors are important for continuous integrity of any PACS [7].

## 2 Aim of the study

This study aimed to investigate the ability to apply subspecialty system in radiology department of Sohag University, suggest recommendations and ideas and making a basal data base for applying the idea in the near future.

## 3 Material & Methods

An online form composed of 12 Questions covering the main items and topics related to applying of subspecialty in radiology was send to every member in Radiology department in faculty of medicine Sohag University at **7<sup>th</sup> of February 2022** , receiving responses from this date and for 2 months later . 29 responses were received from total number of 42 members in duty at the time of the study including all doctors categories: residents , Assistant lecturers & Staff members. Radiology Department team in duty at current time is formed of 18 staff members, 12

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Assistant lecturers and 12 resident doctors. The response was collected automatically in an excel sheet, different percents and graphs were acquired from it.

### 4 Results

69% of members in our department were responded to our study questionnaire. The demographic distribution of responses was 19 males and 10 Females. 11 staff member answered the form representing 38 percent of total responses and , 13 assistant lecturers and 5 residents (Fig1). The maximal duration of practicing radiology of answering members was 27 years and ages between 27 to 52 years.

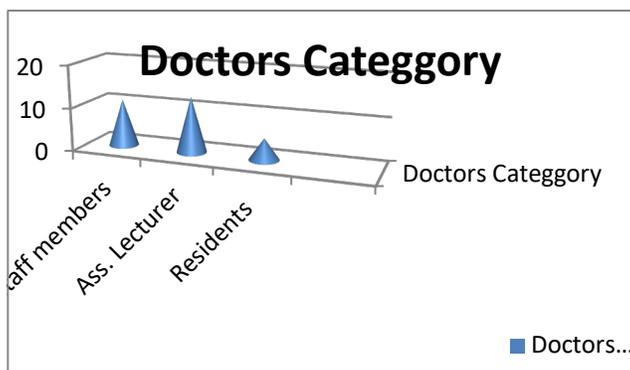


Fig. 1: Doctors categories included in the study.

As regarding main branches of radiology (Diagnostic & interventional) 62% of them (18 members ) are considering diagnostic imaging is the main subspecialty, while only 2 members (7 %) considering interventional radiology , while 31 % (9 members) are considering both (Fig.2).

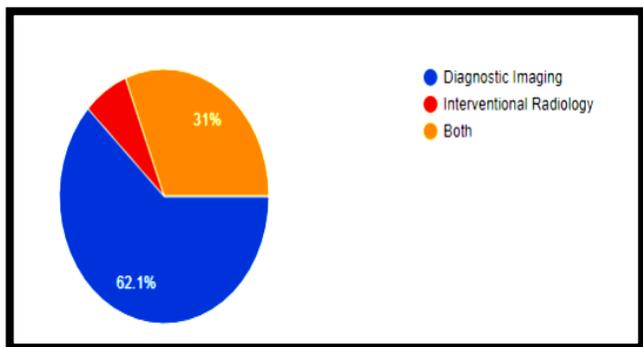


Fig. 2 : The main subspecialty of each group of members of the study.

As regarding the real practicing of different modalities, more than 96% of members are practicing X ray and US as explained in Fig3 , while interventional techniques are the least.

As the applying of radiological subspecialty may be related to body system or modalities, our study showed

that more than 58 % of members are preferring subspecialty according to body system , while about 38 % accepting to apply it either by modality or by system , only one member prefer subspecialty by modality alone. (Fig. 4).

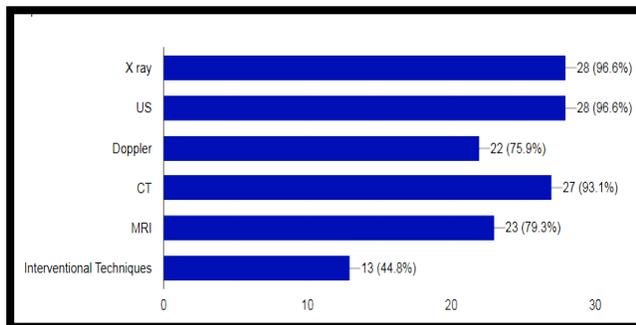


Fig. 3: The percent of practicing different modalities in our department.

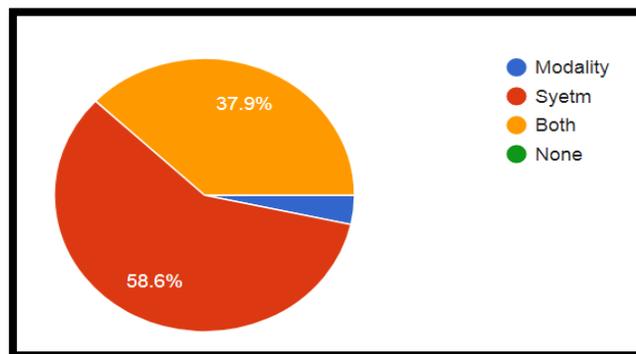


Fig. 4: Attitude toward Different methods of applying subspecialty.

Fig 5 Explains That When the incorporated members in the study asked about ability of applying subspecialty in our department 51 % them consider it a difficult step, versus 41% consider it easy , while 8 % consider it very difficult , but no one said that it is impossible.

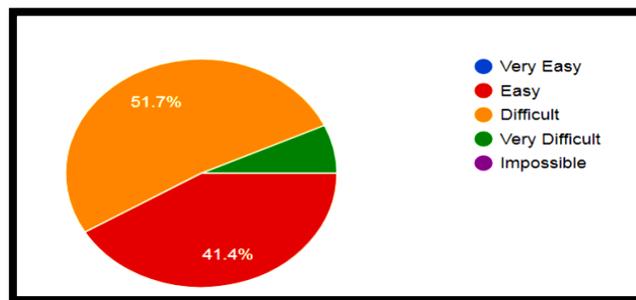
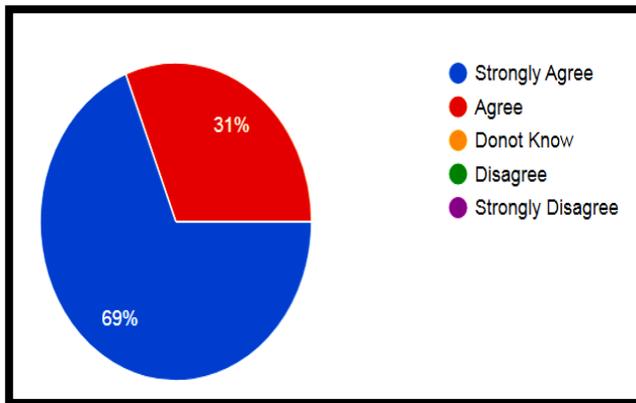


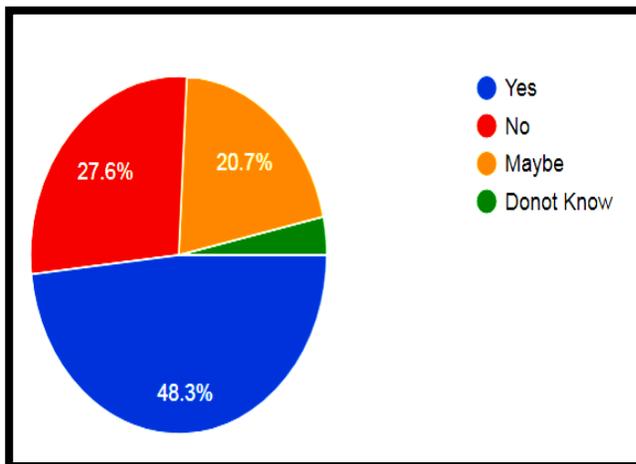
Fig. 5: Attitude of members toward ability of applying subspecialties in our Dep.

100% of answers are agreeing with the principle that Subspecialty improves the scientific level of radiologist as explained in (Fig. 6).



**Fig. 6:** Can Subspecialty Improve the scientific level of radiologist?

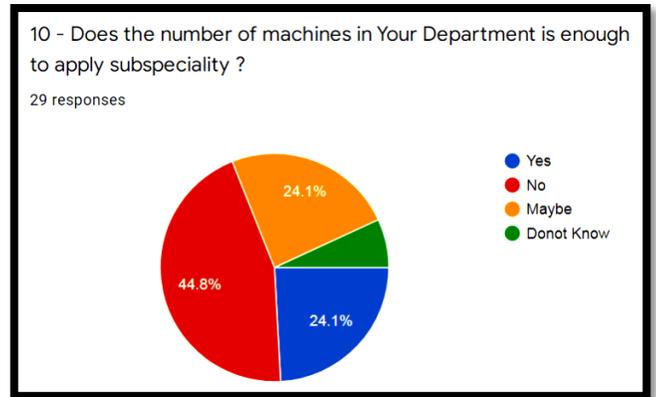
The number of doctors in the department is a very important factor for the ability of instructing subspecialty system, the more number of doctors with different preferred subspecialty, the more chance for this system to be successes. In our department 48% of members are considered the number of doctors is suitable, while 27 % considered it Not, while 20 % are not sure (Fig. 7). While about number of machines only 24 % are considering number of machines is enough for applying of subspecialty, while the other vast majority are disagree or not sure, while 6% are don't know (Fig. 8)



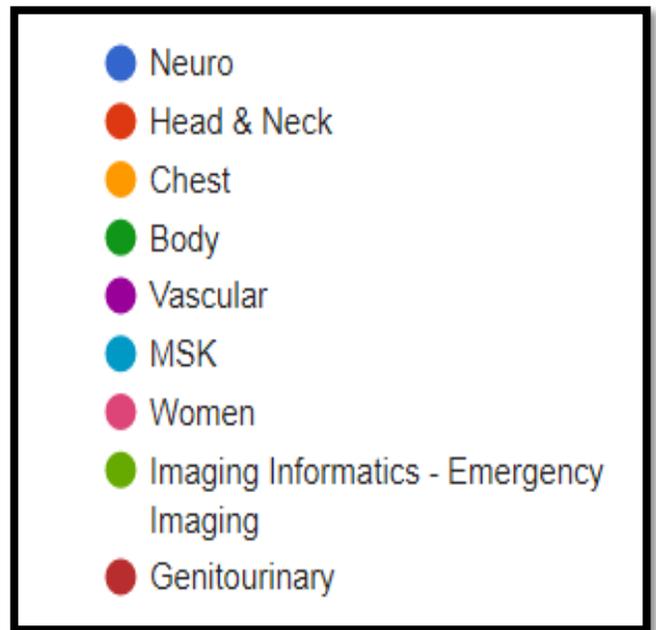
**Fig. 7:** Answers of " Does the number of Personels in Your Department is enough to apply subspecialty?"

The subspecialties' that members included in the study are preferring are mentioned in box- 1, Women imaging is the

highest subspecialty desired, while some members added another subspecialties not mentioned in the questionnaire such as Imaging informatics and emergency imaging.



**Fig. 8:** Number of machines suitability for applying of subspeciality.



**Box 1 -** Different radiological subspecialties preferred in our department.

**5 Suggestions and Recommendations:**

The recommendations of our study according to suggestions of members was as following:

- Applying this Questionnaire results, choosing master and MD research by specialty

- All members should be divided into multiple work groups according to subspecialties
- Distribute radiologists after mater degree according to subspecialty to practice and select the MD thesis in the suitable branch and topic
- Rotate the residents on each unit frequently to know their interest
- Increasing the number of the adequately working machines to create specialized units within the department.
- Dividing our members into equal groups and each staff member being responsible about each subspecialty
- Applying subspecialties of medical researchers in practice
- Beginning with some subspecialties and adding another step by step by adding more machines and manpower in it and training system for thee added new units. .
- Establishing connection channels with subspecialists in other universities all over the country and outside Egypt when possible .
- Adding unavailable machines as : 4D US
- Make major subspecialty groups (Neuro imaging, GIT, Genitourinary, Breast, cardiothoracic, MSK, Head & neck, and interventional radiology (including vascular MRI and CT reporting), each group should cover one session of acute reporting sessions of emergency cases. This will be similar to the system in UK. By making those subspecialties, the department will be able to figure out which subspecialties will need new devices/ places and (mammography, angiography, etc) and be able to make the development plans for the department.

system that need more improvement by time by applying recommendations. The list of suggestions and recommendations by different members are good enough to prepare a complete plan for applying of subspecialty in our department in the near future.

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## 6 Conclusions

Subspecialty in radiology becomes an essential and mandatory step for better radiological practicing [5]. More cooperation was required for acquiring answers from all members. Our study concluded that the team of our department is strongly agreed with this principle and totally supporting applying of it. Diagnostic imaging representing the major practices in our department. X ray and US are the most practiced modalities then CT, and MRI and interventional techniques are the least. Systematic subspecialty is much more preferred than to be specialized by modality. MRI is considered the heights modality that members prefer to practices then US and CT is the least. The major part of members is seeing that applying of subspecialty in our department is difficult or very difficult, but the others are considering it easy. The vast majority are considering machines in our department are not enough for applying subspecialty, while manpower is more or less enough and can initiate subspecialty