

# General practitioners requesting radiological investigations: A qualitative study of the perceptions of radiologists

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## Abstract

**Background:** General practice provides person centred, continuing, comprehensive and coordinated whole person care to individuals and families in their communities. Patients present with early nonspecific symptoms of disease and general practitioners need to be very discriminating when deciding on investigations. Indiscriminate or inappropriate use of radiological investigations could expose patients to unnecessary harm and is a waste of resources. Failure to refer for necessary investigations may lead to inefficient patient management.

This study was carried out to identify the various aspects of the process of general practitioners requesting radiological tests and radiologists' perceptions of this process in Sri Lankan settings.

**Methodology:** Person to person telephone interviews were conducted by one of the investigators with ten consultant radiologists working in different areas of Sri Lanka. A semi structured questionnaire regarding general practitioner requests for radiological investigations was used as a study instrument. Recorded information was studied in depth and then coded. Codes were then combined into themes and analysis was done independently by two investigators and reviewed together with discussion on any disagreements leading to a consensus view.

**Results:** The main findings of the study were that the majority of radiologists thought that most of the requests for radiological investigations were appropriate, however they were disappointed with the provision of background information with the requests such as basic data, clinical history, previous investigations and tentative diagnosis. It was generally thought that a structured referral form would improve the quality of the process of requesting investigations. Radiologists appre-

ciated that a clear pathway of communication with general practitioners was important especially regarding the follow up of the patient.

**Conclusion:** There is a need to improve specific aspects of general practitioner knowledge to facilitate efficient utilisation of radiological investigations and ensure patient safety. General practitioners need to be more diligent regarding provision of adequate clinical information regarding the patient to the radiologist in order to make optimum use of the investigation and the time of the radiologists. Good communication between the referring general practitioner and radiologist will improve the quality of care for the patient.

**Keywords:** general practitioners, radiologists, radiological investigations.

## Background

General practice provides person centred, continuing, comprehensive and coordinated whole person care to individuals and families in their communities<sup>1</sup>.

Patients present with early nonspecific symptoms of disease. Doctors often rely on a good history and clinical examination and use investigations sparingly. However when investigations are required there should be a clear pathway of access and utilisation of the appropriate investigation in order to provide optimal care for patients.

Radiological imaging is one aspect of investigations that general practitioners (GP) may have to use. The results of a radiological investigation may help the GP to diagnose and manage the condition himself avoiding other specialist referral or could help to further refer the patient to the appropriate specialist. Investigations may also be useful to exclude an illness or reassure a patient in certain circumstances. The appropriate and timely use of radiological investigations by general practitioners have been found to reduce unnecessary referrals and reduce delay in diagnosis and initiation of specific treatment for patients in general practice.<sup>2</sup>

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In order to request these investigations GPs should be able to communicate efficiently with radiologists. A request for a radiological investigation should be accompanied by clear indications for the request, a full history, and clinical findings. Referral for an imaging examination is generally regarded as a request for an opinion from a specialist in radiology or nuclear medicine.<sup>3</sup>

The field of radiology is a rapidly expanding one. GPs need to have the necessary knowledge to decide when to request investigations and on the appropriate investigations to request. Indiscriminate or inappropriate use of radiological investigations could expose patients to unnecessary harm and is a waste of resources. Failure to refer for necessary investigations may lead to inefficient patients' management.

This study was carried out to investigate the various aspects of the process of GPs requesting radiological tests and radiologists perceptions of this process in Sri Lankan settings.

## **Methodology**

This was a qualitative study. Ten radiologists of both genders (six male and four female) were purposively selected to represent different areas of the country.

A semi structured interview guide was designed based on available literature, discussion with other GPs and researcher experience to cover different aspects of the process which included appropriateness of the investigations requested by GPs, information expected in request forms, ideas on how to enhance communication and coordination between GPs and radiologists.

A trained pre intern medical officer still not involved in patient care conducted the interviews over telephone as it was thought that this would encourage frank disclosure of the views of the interviewed radiologists. All interviews were recorded and transcribed verbatim. The transcribed information was studied in depth and then coded. Codes were then combined into themes by grouping codes that related to each other. To ensure adequate reliability and validity analysis was done independently by two investigators and reviewed by all investigators with discussion on any disagreements leading to a consensus view.

## **Results**

### **Common investigations requested by primary care doctors**

Ultra sound scans and x rays were the commonest investigations requested by GPs.

### **Appropriateness of the investigations requested by GPs**

The majority of radiologists agreed that investigations requested were appropriate for the clinical problem in most cases. Two radiologists estimated that 10% of requests were inappropriate (CR 1, CR 9).

Two consultants specifically stated that requests for venous duplex scans were sometimes inappropriate and done unnecessarily and could have been avoided if a proper history and examination had been done by the family doctor (CR 3, CR 4).

Regarding X rays one consultant commented that GPs seemed to have poor knowledge of the necessary views for different problems. Sometimes X rays were requested inappropriately and without a proper indication eg. "AP and Lateral skull X rays for nonspecific headache won't help" (CR 3).

### **Quality of the investigation requests sent by GPs to radiologists**

The request form is the tool to communicate vital information to the radiologists. However most of the radiologists in this study revealed dissatisfaction with the information given in the request forms sent to them. Overall they highlighted the importance of providing basic demographic data, a comprehensive clinical history and recording of examination and investigation findings as well as the tentative diagnosis.

"clinically when the request is made the doctor is having a tentative diagnosis and it is very useful to have that in the request forms" (CR2).

Many quoted frequently having to take detailed histories from patients due to the inadequacy of information provided by the referring doctors.

"most of the time they don't give the history" (CR1).

Radiologists also said that sometimes even basic data regarding patient identification details such as name age and X ray number were often not mentioned.

One doctor stated that it would be helpful to note whether the request was urgent or a routine request to help them prioritise investigations appropriately.

It was stated by many consultants that details regarding the site were especially inadequate in requests for investigations on lumps. They stated that this could save valuable time examining the patients to look for the lump.

"where the problem is, what about the area, what are you looking for, that kind of information is very important" (CR5).

Many consultants stated that a clinical history, examination findings and thyroid function tests if available were very important for imaging requests for the thyroid. Drawing the site of the lump in the request form was mentioned as important as a clinically suspected “thyroid lump” could be something else on imaging.

“if there is a palpable nodule they must mark it in the request, where is the nodule clinically, ultra sonically it may be something else” (CR 1).

Requests for duplex scans were particularly problematic. Several consultants stated that often there was no specification of whether the request was for a venous or arterial scan which was important as the indications for the specific scans were different. Sometimes the basic information regarding which side and whether bilateral duplex scan was necessary was not given.

A clinical history was very important for reporting of X rays as one radiologist pointed out that in this instance the patient was often not present to give a history and the consultant had to rely on the information provided by the GP. Some doctors mentioned that previous X rays should be sent in order to compare and gather maximum benefit from the investigation.

### **Structured form to request USS**

Most of the consultants stated that a structured referral form would be useful however they mentioned that it should contain all necessary information but also be “short and sweet”(CR 2). It was stated that a structured form could prompt the requesting doctor to include all necessary information.

“If you have a standard form the person who writes the request will be automatically compelled to write history, clinical findings etc. When it is a blank paper they just write ultrasound abdomen and that’s it” (CR3).

However one doctor thought that a structured form would not be useful as the presentations were varied and would need individualised requests to be written. “each patient presents in a different manner then you send the structured form I don’t think it will be helpful (CR 8).

### **Adequacy of utilisation of radiological investigations by GPs**

The radiologists opinions were divided on whether GPs were utilising imaging investigations adequately. Four doctors thought GPs were using these investigations adequately. Three radiologists thought that radiological imaging was overutilised by GPs.

One doctor stated that there was inadequate concern for the risks of the investigations to patients.

“Some GPs never think about the radiation dose to the patient” (CR 8).

Another said there was too much emphasis on investigations and inadequate use of clinical skills by GPs.

“they give up clinical judgment and depend on radiological investigations. That is the problem” (CR 2).

Three doctors thought that radiological investigations were underutilised by doctors. One doctor stated that he received very few requests from GPs and expressed the opinion that he thought that GPs were not utilising these resources adequately.

Some doctors said that use of radiological investigations by GPs was limited and they especially mentioned investigations such as “barium studies, IVUs and Doppler studies” (CR 5).

### **Communication between GPs and radiologists**

Some of the radiologists wanted feedback on the patients from the GPs and were not happy about the lack of feedback post investigations.

We don’t get a feedback. “They should give us a feedback then we know what they want; if not they just ask for scans, we write and we don’t know what happens to the patient (CR 1).

One radiologist stated very frankly that feedback from the GP could help improve his skills. “feedback is very much needed to improve my findings as well” (CR 10).

One doctor suggested that GPs should communicate directly with the radiologist through telephone or e mail. (CR 4).

Some doctors stated that it was important to provide a telephone number of the referring GP in case there was a need to communicate emergency information about the patient eg. A malignancy, surgical emergency etc (CR 6, CR 10).

Some doctors mentioned the importance of establishing a formal referral system within the country (CR 5).

### **Other suggestions**

Some consultants suggested that attempts should be made to educate GPs on available resources and improve their basic knowledge on radiological investigations.

One consultant suggested that if GPs used the Sri Lanka College of Radiologists guidelines the quality of referrals would improve.

### **Strengths and limitations**

The semi structured interviews were conducted individually therefore independent opinions could be gauged from the consultant radiologists excluding bias inherent in group techniques such as social acceptance bias.

This study was conducted by doctors involved in general practice therefore there may have been some bias in interpretation of data due to the background of the investigators.

### **Discussion and conclusions**

In this study a majority of radiologists thought that requests for radiological investigations were appropriate. However there were many lapses. Previous studies have indicated that that up to 20% of diagnostic imaging procedures may be inappropriate or contribute no useful information<sup>4</sup>.

It is obvious from the findings that GPs should be educated on the different aspects of requesting radiological imaging such as the appropriate investigations for the clinical problems and the risks associated with these investigations. The radiologists participating in this study raised a query on whether imaging investigations were utilised appropriately by GPs. Education of GPs will help fill in gaps in GP knowledge on appropriate imaging and lead to improved efficacy of the referral process, expedite patient care at the primary care level itself, optimise cost of care and widen the range of radiological investigations utilised by GPs. Previous studies have reported that guidelines could help improve the quality of the process of referring for radiological investigations and reduce the number of unnecessary requests for imaging<sup>5,6</sup>.

Radiological investigations should be undertaken with extreme discretion as they often expose the patient to radiation. Guidelines clearly state that it is the referring doctors responsibility to provide adequate information to the radiologist who should determine if the requested investigation is appropriate and the exposure to radiation is justified<sup>7</sup>. The results of this study highlight inadequacies in GP requests for radiological investigations and the importance of communicating necessary information regarding the patient to the radiologist in a precise and succinct way in order to ensure appropriate prioritisation of investigations, to save time and ensure maximum use

of available resources. Numerous audits and studies have reported that inadequate provision of information with radiological requests is a common problem<sup>7</sup>. The consensus view of radiologists in this study was that a structured request form could facilitate this process as reported by other studies conducted in the past<sup>8,9</sup>.

There are only a few studies on the relationship between radiologists and GPs. GPs have little opportunity for discussion with the radiologist they are referring to. It is reported that the radiology report is often the sole method of communication from the radiologist to the general practitioner (GP) in the primary care setting<sup>10</sup>. Good communication is important to achieve a better outcome for the patient through appropriate imaging investigations being done. In this study it was heartening to discover that the majority of radiologists were willing to have a clear path of communication with GPs. It is important that the GP should have the opportunity to communicate with the radiologist in an emergency or if there was a necessity to discuss options regarding the requested investigation if the clinical radiologist thought it was necessary. Radiologists also appreciated receiving feedback on the clinical outcome of the patient and the findings of this study show that good communication between GP and radiologist could lead to improved health outcomes for patients as well as lead to improved quality of GP and radiologist clinical practice.

The findings of this study provide information to implement practical ground level strategies to improve GP use of radiological resources in Sri Lanka. This information highlights the need for good communication between the GP and the radiologist and the findings may inform the development of guidelines for primary care doctors referring for radiological investigations.

### **Declarations**

### **Ethics approval**

The Ethics Committee of the Faculty of Medicine, University of Kelaniya granted ethical clearance to conduct this study. Written informed consent was obtained from radiologists.

### **Competing Interests**

None of the authors have any financial or non financial competing interests.

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