

# Imaging of low back pain in a public health centre. A study of test request behaviour of doctors

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## ABSTRACT

### Background

Lumbosacral spine radiography is a proven and valuable procedure for evaluating the vertebrae, disk spaces, facet and uncovertebral joints, neural foramina and paravertebral soft tissues. The purpose of radiographic examinations is to identify or exclude anatomic abnormalities or disease processes of the spine and related tissues. The written or electronic requests should provide the necessary information to show the medical need for the examination and allow for its appropriate performance and interpretation.

### Objective

Our study was conducted to evaluate the appropriateness of lumbar spine radiography requests for low back pain in a public health centre. The benchmarks used were the 2009 NICE guidelines on the management of persistent non-specific low back pain and the 2011 Royal College of Radiologists' referral guidance.

### Method

A descriptive, retrospective, cross-sectional study design was applied. A random sample of 100 lumbosacral spine radiographs was analyzed as recommended by the Royal College of Radiologists guideline tool and the 2009 NICE guidelines. Data was obtained from the Radiology Information System (RIS) and the Picture Archiving and Communication System (PACS).

### Results

Sixty-four percent (n=64) of lumbar radiographs performed for low back pain were indicated and judged as appropriate as per existing guidelines. One radiograph (1%) was performed for non-specific low back pain.

### Conclusion

This study reached its objectives of evaluating the appropriateness of lumbar spine radiography requests for low back pain. It was noted that there is a need to increase awareness of the Royal College of Radiologists guidelines to enhance appropriate use of lumbosacral spine radiography to ensure more efficient resource utilisation.

### Keywords

Health services research; primary health care; community health centers; quality of health care; clinical audit

## INTRODUCTION

Radiography of the spine is a proven and useful procedure for evaluating the vertebrae, disk spaces, facet and uncovertebral joints, neural foramina and paravertebral soft tissues. The goal of radiographic examinations is to identify or exclude anatomic abnormalities or disease processes of the spine and related tissues (Reinus, Strome and Zwemer, 1998).

Non-specific back pain is a common problem for primary and secondary care. It is defined as back pain lasting longer than 6 weeks and less than 12 months with no specific cause suspected such as a fracture, infection, malignancy or inflammatory disorder (National Collaborating Centre for Primary Care, 2016). Back pain is a major cause of sickness and absence from work. Much lumbar spine radiographs undertaken for back pain contribute significantly to the radiation burden of the population. The radiation dose of a simple single lateral spine x-ray is the equivalent to 50 chest x-rays (Department of Clinical Radiology, 2016).

NICE Guidelines advised not to offer x-ray of the lumbar spine for the management of non-specific low back pain (National Collaborating Centre for Primary Care, 2016). The latter guidelines stated that MRI should

be considered when a diagnosis of spinal malignancy, infection, fracture, cauda equina syndrome, ankylosing spondylitis or another inflammatory disorder is suspected (National Collaborating Centre for Primary Care, 2016).

In 2007 the Royal College of Radiologists issued guidelines for imaging non-specific back pain suggesting that x-rays would be only indicated if presentation suggested osteoporotic collapse in the elderly and for suspected spondylo-arthropathies in young patients” (The Royal College of Radiologists, 2016). It is important to note that the guidelines conceded that patients gain satisfaction from having information needs met by the x-ray (National Collaborating Centre for Primary Care, 2016; Department of Clinical Radiology, 2016).

Randomised unblinded controlled trials by Kendrick et al. (2001) and by Kerry et al. (2002) showed that lumbar spine radiography in primary care patients with acute low back pain were not associated with improvement in physical function, pain or disability. On the other hand, it is associated with enhanced patient satisfaction and an increase in GP workload (Kendrick et al., 2001). The authors comment that guidelines on the management of low back pain in primary care should be consistent about not recommending radiography of the lumbar spine in patients with low back pain in the absence of indicators for serious spinal disease, even if it has persisted for at least six weeks.

Consistent with this, a systematic review and meta-analysis conducted by Chou et al. concluded that lumbar imaging for low back pain without indications of serious underlying conditions does not improve clinical outcomes. Therefore, clinicians should refrain from routine, immediate lumbar imaging in patients with acute or subacute low-back pain and without features suggesting a serious underlying condition (Chou, Fu, Carrino and Deyo, 2009). The written or electronic requests should provide the necessary information to show the medical need for the examination and allow for its appropriate performance and interpretation (Reinus, Strome and Zwemer, 1998).

Our study was conducted to evaluate the appropriateness of lumbar spine radiography requests for low back pain in a public health centre with reference to the 2009 NICE guidance on the management of persistent non-specific low back pain and the 2011 Royal College of Radiologists’ referral guidance.

## METHOD

A descriptive, retrospective, cross-sectional study design was applied. All requests for lumbosacral spine radiographs taken in a primary healthcare centre in Mosta, Malta, between January and December 2014 were obtained from the Radiology Information System (RIS) and the Picture

Archiving and Communication System (PACS). A random sample of 100 radiographs was analyzed as recommended by the Royal College of Radiologists guidelines. The data was obtained in an anonymous manner.

The patients’ demographic and clinical characteristics were recorded. The clinical details presented on the request forms were reviewed and evaluated to determine as to which of the following outcome groups the requests could be classified in:

- Radiograph performed for non-specific low back pain;
- Radiograph performed for low back pain; clinical details reviewed and showed that the radiograph request was appropriate;
- Radiograph performed with insufficient clinical information provided to classify.

Radiographs reviewed as appropriate were those performed for low back pain in the presence of red flag symptoms, and those suggestive of “osteoporotic collapse in the elderly”, as per the 2009 NICE guidance and the Royal College of Radiologists guideline tool (National Collaborating Centre for Primary Care, 2016; The Royal College of Radiologists, 2016). Data analysis was subsequently carried out using the Statistical Package for Social Sciences Version 20.

Patients who underwent lumbosacral spine radiography in a public hospital, or in the private sector were excluded from this study. Ethical approval was obtained from the University of Malta Research Ethics Committee.

## RESULTS

There were 1877 lumbosacral spine radiographs performed in 2014 in the primary healthcare centre. The majority of patients were females (51%, n=1021). The sample population had an age distribution of 8-96 years with a mean of 55 years. The mode and median age were 65 years and 58 years respectively. The ratio of public to private GP referral for lumbosacral spine radiographs was 3:1.

Sixty-four percent (n=64) of lumbar radiographs performed for low back pain were indicated and judged as appropriate according to existing guidelines. Thirty-five percent (n=35) of lumbar spine radiographs was carried out with insufficient clinical details. One radiograph (1%) was performed for non-specific low back pain.

## DISCUSSION

Most patients referred for lumbosacral spine radiographs were females. This might reflect the fact that females have higher GP service utilisation rates (Wong et al., 2010; Pullicino et al., 2015). The ratio of public to private GP referral for lumbosacral spine radiographs was 3:1 since patients who warranted or expected such radiographs

might have attended the public sector directly. Primary care patients might be responding to what is available in each sector.

The Royal College of Radiologists recommends targets for lumbar spine radiography for low back pain (Table 1). There is a need to boost awareness of these guidelines to enhance appropriate use of lumbosacral spine radiography to ensure more efficient resource utilization (Culleton, O’Keefe and Quinn, 2016). Moreover, by minimising the number of lumbar radiographs performed inappropriately for non-specific low back pain, patients can reach important points in the care pathway more rapidly (National Collaborating Centre for Primary Care, 2016).

**Table 1: The targets for lumbar spine radiography for low back pain recommended by the Royal College of Radiologists**

Assessing local practice	
Indicators for lumbar spine radiographs for low back pain	Targets (%)
Non-specific low back pain	0
Low back pain judged as indicated appropriate with reference to existing guidelines i.e. osteoporotic collapse in the elderly	100
Insufficient clinical details	0

Furthermore, a reduction in unnecessary x-rays is desirable since this reduces costs (Department of Clinical Radiology, 2016). One might consider enhancing clinical information on referrals by designing a new lumbar spine referral form. This might help enhance the vetting and reporting of radiographs (Culleton, O’Keefe and Quinn, 2016).

An audit performed in the Rotherham NHS Foundation Trust by the Department of Clinical Radiology showed that only 22% of lumbar spine radiographs undertaken met either the 2007 Royal College of Radiologists (RCR) guidelines or the 2009 NICE guidelines (Department of Clinical Radiology, 2016). Another audit undertaken in Letterkenny General Hospital amongst patients aged 65 and over showed that 18% of referrals were deemed appropriate according to RCR guidelines (Culleton, O’Keefe and Quinn, 2016).

Patients gain satisfaction from having information needs met by the X-ray investigation. The challenge for primary care physicians is to increase satisfaction without resorting to radiography (Kendrick et al., 2001). Therefore,

it is legitimate to conclude that the possibility of minor psychological improvement should be balanced against the high radiation dose involved.

This study reached its objectives of evaluating the appropriateness of lumbar spine radiography requests for low back pain in a public health centre. Therefore, it provides a systematic examination of current practice to assess how well primary care practitioners are performing against set standards. This helps to enhance safe care and efficiency by ensuring a better use of resources. On the other hand, several limitations were identified in the present study. Due to time and resource constraints, radiographs carried out in the public hospital and in the private sector were not captured. This study did not assess whether these imaging services were cost-effective and whether patient expectations were met. Future research can address these limitations.

## CONCLUSION

This study provides information for primary care clinicians to improve patients’ outcomes. Such findings are also useful to policy makers, educators and researchers who aim to improve the primary health care system to enhance resource allocation and utilisation.

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## RESEARCH ARTICLE

# Patient satisfaction in Maltese public health centres

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## ABSTRACT

### Background

Patient-centred care is a core value in family medicine. Patients have a right to receive high quality health care taking into account the individual's biopsychosocial problems.

### Objective

To assess patient satisfaction in north and central Maltese public health centres and identify areas for improvement.

### Method

A total of 120 patients were included. Prior authorisation from the Primary Health Care Department and from the data protection office was acquired. Patients who visited the health centre for the general practitioner (GP) service

and accepted to take part in the questionnaire were required to sign a consent form. A questionnaire was then given to each of these patients on which they had to mark their level of satisfaction in each of the following areas: waiting time, making appointments, speaking with a doctor on the phone, doctor-patient communication, patients' privacy and dignity, and overall satisfaction.

### Results

From a total of 120 patients, 39.2% (n=47) stated that they were not at all satisfied with waiting times at health centres. 49.2% (n=59) were "very satisfied" with the overall service given at health centres. Patients suggested increasing the number of doctors in health centres and having a more organised system whilst waiting at the GP clinic. The Diabetes and Chronic Disease Management Clinics received very positive feedback from patients.