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Patient information regarding medical radiation exposure is inadequate: Patients' experience in a university hospital

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ABSTRACT

Introduction: It is suspected that little or no information is provided to patients regarding radiological examinations. The purpose was to evaluate the coverage, content and source of this information in a university hospital.
Methods: Altogether 147 patients (18–85 years) were interviewed after different examinations using a questionnaire. The patients had undergone 35 low (<1 mSv), 66 medium (1–10), and 46 high (>10) dose examinations. They were asked if they were informed about radiation use, the course or indication of the examination, the consequences of not having the examination, other options, the dose and risks of radiation, the source for the information and if any consent was enquired.
Results: 52 (35%) patients did not receive any information while 95 (65%) obtained some information. Fifty-six (38%) patients received an information letter, and 75 (51%) obtained oral information, mainly from the referrer or the radiographer. The information was mostly about indication, course or radiation use, very seldom about radiation risks and the other areas. Those with a nuclear medicine examination received information more often than those with other medium- or high-dose examinations ($p = 0.004$). The patients scored the received information as 2.2 (mean, SD 1.3) on a Likert scale from 1 (poor) to 5 (good).
Conclusion: Patients obtained inadequate information regarding radiological examinations in a university hospital. The information was provided non-systematically from various sources. The results help to set up practical guidelines for systematic information and to follow up their efficiency. The mode of operation might be helpful elsewhere in the future.

Introduction

There have been strong efforts to improve implementation of justification due to increased radiation doses to the public, concerns about its long-term consequences and reports of inappropriate examinations.[1–5] According to the International Atomic Energy Agency (IAEA) report, justification would be facilitated by the "3 As": awareness, appropriateness and audit.[4] Referrers and practitioners as well as patients are involved in the justification process of individual medical exposures.[4,6] The Council Directive 2013/59 underlines the definition of responsibilities and tasks among all professionals involved in medical exposure and the requirements concerning information to be provided to patients.[6] In general, the information should include the type and nature of the suggested examination, its benefits and risks, alternative examinations and the risks of not undergoing an examination.[7] Patients should be provided with sufficient information to allow them to make informed consent.[4] It would fulfil the requirements and patient rights and enhance awareness and radiation safety. Appropriate information may reduce anxiety. It may also decrease patients' demand for inappropriate examinations.[4,8–10]

It has been noted that little or no information is given to patients on these issues.[4,7,11] The IAEA has stated that there is a need for improved communication, both between professionals and between professionals and patients.[8] Guidelines for giving information have been provided lately.[4,7,12,13] Nevertheless, previous studies have concentrated on certain areas of information.[14–16]

The purpose of this study was to find out the coverage, content and source of the information obtained by patients regarding their previous examinations using ionizing radiation in a university hospital. The aim was to chart the situation and to utilize the results to set up practical guidance for providing information and improving justification and radiation safety.

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Methods

This study is part of an interview, which was performed from June to September 2012 in a department of diagnostic radiology of a university hospital. The study was approved by the Institutional Review Board and only oral informed consent was required as no patient data were enquired or registered.

A structured questionnaire for the study was prepared by the authors in cooperation with a statistician. A pilot study was performed with a 10-patient sub-sample. The questionnaire was completed by the interviewer (LU, radiographer) during a face-to-face discussion with the patient. The patients were enquired about the information they had obtained prior to or during the examination. They were asked about the issues listed in Table 1. The questions related to the source and intelligibility were multiple-answer type multiple choice questions while others were single-answer type questions. The question regarding the course comprised an additional query about the content of the information (preparations, duration, what will happen). The question related to the dose and the risks also included an additional query with an open choice about the way the information had been provided. Furthermore, using a Likert scale from 1 (poor) to 5 (good), the patients were asked to evaluate the grade of the information obtained.

The patients took part in the study voluntarily and responded anonymously. The method was based on convenience sampling.[17] The aim was to have a balanced number of examinations distributed among low, medium and high dose categories (see below) and to have patients coming from examinations regarding different modalities and body parts. During her times for research, the radiographer followed the list of examinations in the Radiology Information System to select available patients according to the principles above. The cases were picked up after different examinations. Paediatric patients and patients who were not cooperative or who were in poor health were excluded. The radiographer asked the questions, explained any unclear aspects and filled in the printed questionnaire. Ethical aspects were taken into account during the interview. The interviews were conducted face-to-face in a peaceful room by the radiographer with more than 30-year experience of patient work in radiology. The presence of the radiographer could help the patients to feel safe while talking about radiation and it enabled them to ask questions if necessary. The first part of the questionnaire dealing with obtained information is the basis for this study. In the second part, patients could express their wishes related to future information. These results have already been reported in an article published in 2015.[18]

Altogether 147 patients were interviewed. The data were entered into the Webropol survey and analysis software (2.0)[19] rechecked and analysed. In the hospital concerned, the practice of posting a letter with information on the examination (defined here as "an information letter") to patients is variable, e.g., depending on the clinic or department. As this could misrepresent the results, written and oral information were analysed separately. Letters that only contained information about, e.g., an appointment or a department or contact information were not included in the analysis.

The study included patients by appointment, inpatients as well as emergency patients (who were not in too poor health). The age of the patients was categorized into three groups: 18–41 years, 42–65 years and 66–85 years. The dose levels of the previous examinations were classified as low [<1 millisievert (mSv)], medium (1–10 mSv) or high (>10 mSv).[4,20] The patients had undergone altogether 156 examinations with different levels of radiation. In the case patients had just undergone more than one examination, the examination exposing to the highest dose was chosen. Hence, the number of examinations was 147. There were 35 examinations with a low, 66 with a medium and 46 with a high dose (Table 2).

The number and proportion of patients receiving information was calculated to represent the amount and source of information given, and compared between men and women, different age groups and the dose levels of the previous examinations by using Chi-square test. The rating of obtained information was presented as mean and standard deviation (SD), and compared between dose levels using independent samples t-test. IBM SPSS Statistics 22 (IBM Corporation, Armonk, NY)[21] was used to conduct the statistical analyses. The open questions were analysed using content analysis.

Table 1
The questions asked from the patients.

Questions
Age of the patient
The examination the patient had just undergone
If the patient obtained information about/If yes, from which source
• Use of radiation
• Course of the examination
• Indication of the examination
• The consequences of not having the examination
• Other options
• Estimated dose of the examination
• Possible risks of radiation
If the information provided was understandable
If any consent was enquired/If yes, by whom

Results

Altogether 147/149 (99%) of the patients invited were willing to take part in the study. The patients were 18–85 years (average 52.8

Table 2
The number of different examinations and interventions the patients had undergone.

Different examinations classified according to the dose of the examination	Number of the examinations			
	Low (<1 mSv) n	Medium (1–10 mSv) n	High (>10 mSv) n	Total n
Low				
Thorax	7			
Wrist	1			
Hand	4			
Thigh	1			
Knee	3			
Foot	2			
Sinuses	3			
Thoracic spine	2			
Mammography	12			
Medium				
Lumbar spine		10		
Hip		10		
Head CT		3		
Thorax CT		10		
Lumbar spine CT		1		
Bone scan		11		
Fluoroscopy examination		21		
High				
Abdominal CT			9	
PET-CT			13	
Radiological intervention[a]			15	
Angiography			9	
Total	35 (24%)	66 (45%)	46 (31%)	147

[a] Guided by fluoroscopy.

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