

## Effect of Education on Reduce the Number of Radiography of Hospitalized Patients in Hekmat Hospital in Sari

Mehdi Ghadi Sahebi<sup>1</sup>, Atousa Khoshkar<sup>2</sup>, Dr. Majid Bahrami<sup>3</sup>, Dr. Nourollah Sadeghzadeh<sup>4</sup>, Mahboubeh Ebrahimi<sup>5</sup>

<sup>1</sup>. Expert of Radiology in Hekmat Hospital, Sari, Mazandaran, Iran

<sup>2</sup>. Expert of Accreditation in Hekmat Hospital, Sari, Mazandaran, Iran

<sup>3</sup>. Head of Hekmat hospital, Sari, Mazandaran, Iran

<sup>4</sup>. Assistant Professor, Department of Radiopharmacy, Faculty of Pharmacy, Mazandaran University of Medical Sciences, Sari, Iran

<sup>5</sup>. MSc in Management

**Abstract:** The increasing cost of treatment, it can motivate managers to fine indications costs, have special sensitivity. Since your health care providers determine the demand unlike other markets. Recent demand in this market is much less than providers of information and awareness, increasing knowledge and awareness of patients (demanders) can contribute to excess cost control have created. As well as knowledge creators demand (doctors) will have a significant role in reducing the surplus diagnostic service request. In addition, part of the costs caused by the surplus of skilled personnel in the health sector is inadequate which can be prevented with the raising of the additional costs.

[Mehdi Ghadi Sahebi, Atousa Khoshkar, Majid Bahrami, Nourollah Sadeghzadeh, Mahboubeh Ebrahimi. **Effect of Education on Reduce the Number of Radiography of Hospitalized Patients in Hekmat Hospital in Sari.** *Nat Sci* 2016;14(9):17-20]. ISSN 1545-0740 (print); ISSN 2375-7167 (online). <http://www.sciencepub.net/nature>. 3. doi:[10.7537/marsnsj14091603](https://doi.org/10.7537/marsnsj14091603).

**Keywords:** Radiography, Healthcare, Hekmat Hospital

### 1. Introduction

In social security of Hekmat hospital Sari, after reviewing the costs and revenues Diagnostic medical services in 2013, costing some diagnostic services, such as chest x-rays more than the rate approved by (income from it), that if we ignore the social benefits of this service can be said, this has been done in-service loss; therefore, we obtain the social benefits of doing it.

Hence, a reported six-month period all patients were evaluated chest X-ray amounting to 82% of patients showed a particular problem in the chest. Considering the harmful effects of X-rays for patients and staff, followed by the people of the necessity of reducing surplus graph patients increases. The recipe was the number one managed care therapy [1] for all patients undergoing surgery over 60 years in the six months before necessary and as a result, doctors are reluctant to accept responsibility and reduce these graphs do not show, so reducing these graphs need to raise awareness and scientific physicians, staff and patients are concerned.

This paper examines the Social Security Hospital in Surrey wisdom that leads to a reduction of approximately 50 percent were above graphs for other similar centers will be summarized.

### Research Methodology

This cross-sectional study was interference and at one point, in terms of costs created by their medical

justification, the community and hospitals on the one hand, patients' awareness of the harmful effects of radiation from the other side and the clinical and laboratory personnel, including personnel training and awareness of interference, chest x-rays for patients admitted to more prescriptive and applied with precision and sensitivity.

To justify the doctors, physician radiologist (Technical Director of Radiology) in collaboration with the health hazards of X-ray physics and even financial loss resulting from any graph to explain them. After thinking it over several sessions between doctors and anesthesiologists, heart was approved by the hospital's internal guidelines and by managed care instruction no. 1, do this graph for patients under 60 years old to be implemented. Consultant Physician in order to allow it to operate, after careful examination of the patient and family history of disease and, if necessary, request the chest x-ray and for routine clinical personnel and patients not referred for chest radiography, radiology unit was considered.

In addition to the numerous meetings with the clinical staff (nurses) were formed and these were trained for them and was approved, nurses humanity graphs unnecessary harms to patient education for patients and encourage him to record your illness completely and correctly described and all related documents, including chest x-ray and medications to explain consultant.

The radiology department personnel on how to properly do chest x-ray (previous training, proper positioning, how proper breathing, proper technical conditions and exposure), patients are taught the principles of protection and shielding of replication and re-exposure to the patient and he has exposure and the consumption of film is necessary. The results of the above measures resulted in reducing the number of graphs chest for elective surgical patients at the same time periods. The table and chart below shows the cases correctly.

#### Discussion:

One of the measures taken in this study was to investigate the status quo in terms of both costs and benefits, both in terms of indications for diagnostic service (chest x-ray), respectively. (Table 2)

To calculate the cost-benefit of this service, the first step is to identify activity-based costs. The direct costs to the radiology department, including staffing costs, consumer goods, food and water, electricity, telephones, fuel consumption and support costs, including staffing and etc was divided.

Given that the current accounting system allowing separation of some units does not give a breakdown of the costs of energy, to distinguish it from the method used in the industry, so that the cost of electricity and gas in the area, the phone costs of personnel, cost of feeding (according to calculated unit cost of each press breakfast, lunch and dinner), In proportion to the number of people per shift and in addition also to support cost-performance ratio of total hospital performance ratio is allocated to the sector.

Medical expenses for the cost of consumables used in chest x-ray film storage system completely were indivisible and other costs that were calculated. With regard to the requirement that the Hospital 24 hours a day whether or not the patient, is active due to the emergency conditions. These costs are considered to agree radiology evenly divided on the number of graphs is done. Cost-per-graph is the cost of consumer video and chest radiograph radiology unit cost of each unit was calculated. (Table 3)

No part of the costs created by the graph indicated, related to harmful X-ray is applied to the

patient and staff that otherwise prevent irrecoverable costs to the country's health sector.

It should be noted that in addition to natural resources, human environment in industrial and medical radiation received from the source. X-ray diagnostic devices are one of the things that most of the dose of radiation to patients and staff apply Radiation worker. [2]

Without doubt one of the most useful applications of ionizing radiation rays but it's the people with the most exposure to this type of resource. [3]

According to the basic principles of justification and optimization of radiation protection, radiation protection by Commission ICRP (INTERNATIONAL COMMISSION ON RADIOLOGICAL PROTECTION) It is recommended that any test or treatment by ionizing radiation will be clearly beneficial to patients is justified and new technologies optimize the exposure of patients and staff is minimal. [3]

ICRP recommends that any exposure should consider social and economic factors doable reduced to less justified ALARA (ALLOW AS REASONABLY ACHIVABLE), this means that the dose rate, whatever they may be less justified and doable. [4]

Review and measurements performed by the ICRP [5-6] and continues as radiation workers and the general public should receive a dose of radiation to the dose limit of 20 mSv for radiation workers and the general public is 1 mSv per year. [7]

In general, studies and research in the field of dose a patient, especially in radiology because of the great importance it is now at the forefront of research studies that examine different aspects of this issue.

In connection with the surface dose received by patients every year several reports appeared. In the United States, Greece, Nigeria and Bangladesh have shown that patients at dose level is below the permissible limit ray examination [7, 8, 9], but in countries such as China and Tanzania [8-10] is above the permissible limit values. Although these measurements have been made in some provinces but not in the hands of written information from this amount was important.

Table 1. Comparison graph statistics on the number of patients from 2012-2015

First six months 2015	Second six months 2014	First six months 2014	Second six months 2013	First six months 2013	Second six months 2012	First six months 2012	
391	511	436	505	582	737	730	Number of chest x-ray
2256	2541	2264	2336	2226	2212	2109	Total number of hospitalization
17%	20%	19%	22%	26%	33%	35%	Percent

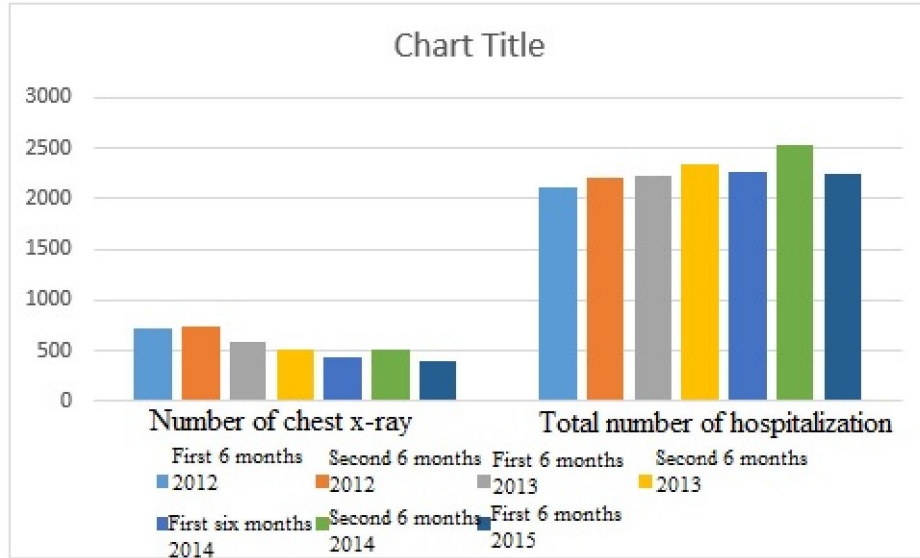


Fig 1. Comparison graph statistics on the number of patients from 2012-2015

Table 2. Evaluation of chest radiography in 2013

Chest ratio over 60 years collect samples	%52.89
Chest ratio over 60 years normal to collect samples	%44
Chest ratio over 60 years normal to sum of chest for over 60 years	%83
Chest ratio under 60 years to collect samples	%47.11
Chest ratio under 60 years normal to sum of chest for under 60 years	%47.11

Table 3. Cost per chest X-ray in 2013

Description	Rls.
Personnel cost per graph (Rial)	67163
The cost of each series of drug processing (Rial)	1680000
The cost of processing each stereotype drug	1886
The cost of each X-ray film (35 * 35) (Rial)	30500
The cost of each X-ray film (14 * 17) (Rial)	49500
Telephone Costs per graphics	85
Costs of non-medical consumables	42908967
Non-medical consumables cost per case of graph (Rial)	203
Total cost per Chest X-ray	112626

Table 4. Comparison cost of testing and tariffs in 2013

Description	Rls.
The cost of any chest procedure	112626
Chest tariff	47800
Chest subsidies	64826

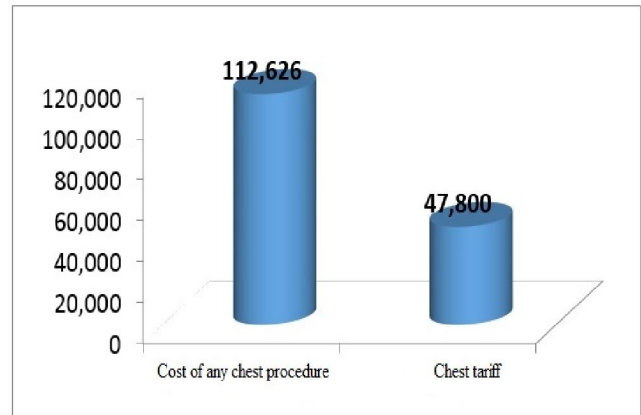


Fig 2. Comparison cost of testing and tariffs in 2013

**Suggestions:**

- Communicating with physicians about the importance of issue
- Increasing the accuracy of clinical examination and X-ray demands

**References:**

1. Managed care, number one, Regulation no. 2, Section B.
2. Darby SC. The genetically significance dose from diagnostic radiology in Great Britain. NRPB (National Radiation Protection Broad). 1997; 106.
3. Benini A. Medical Radiation Exposure. IAEA regional workshop radiation protection and quality assurance in diagnostic radiology. Nicosia Cyprus. 1993; 14-25.
4. Sohrabi M. Radiation Protection infrastructure in Iran. IAEA Munich. 1990; 245-55. 7-11.
5. Declan R, Kyrio J. Radiation protection in interventional radiology. Clin Radiol. 2001; 56: 99-106.
6. Faulkner K. Introduction to constancy check protocols in fluoroscopic systems. Radiat Prot Dosim. 2001; 94(1-2): 65-8.
7. michelr R, perie SC. effective dose equivalent estimates in diagnostic radiology with single dosimetry. health phys.2002;79:17-19.
8. li lb, wang jp, yu xr, et al. medical radiation usage and exposure from medical x-ray in china2001; 98: 231-4.
9. Ogunseyinde AO, Adeniran SA, Obed RI, et al. Comparison of entrance surface doses of some X-ray examination with CEC references. Radiat Prot Dosim. 2002; 98: 231-4.
10. muhogora We, Nyanda AM. The potential for reduction of radiation doses to patients undergoing some common x-ray examination in tanzania. 2001; 94: 381-4.

Received: 3/25/2016

Online: 6/18/2016