

Investigating the Knowledge of Radiography Personnel on the Protective Principles in the Radiology Department of Zahedan Hospitals in 2016

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Abstract

Introduction: Radiography is one of the most important diagnostic methods in health care services, and the effective use of this technology is only possible through certain and well-organized procedures. The present study was conducted to determine the knowledge of the radiology department staff regarding principles and protective measures in Zahedan hospitals in 2016.

Method: The present study was carried out with the aim of figuring out the personnel knowledge of the protection principles in the radiology department of the hospitals of Zahedan in 2016. After collecting questionnaires, the data were analyzed using SPSS software 18.

Findings: the demographic data of 91 radiology staff members working in these hospitals, of 91 of whom, 35 were men and 56 women. In terms of their educational qualifications, 51 (56%) had associate's degree, 38 (47.8%) bachelor's, and 2 (2.1%) master's degree. Additionally, the minimum year of service for the staffs was 2, and the maximum 28 years.

Conclusion: Based on the obtained results, the level of knowledge of personnel regarding individual protection is low and requires training and protection courses. Personnel's knowledge on radiology department and patient protection is appropriate, but their level of education would be better to increase in the field.

Key words: Knowledge, Radiography Personnel, Protective Principles

INTRODUCTION

Radiography is one of the most important diagnostic methods in health care services, and the effective use of this technology is only possible through certain and well-organized procedures. Assessing the current status and comparing it to reliable standards of international protection committee and radiology units is a key factor in ensuring the reliability and usefulness of these devices (1 and 2). A wide range of factors in radiography is under the control of the radiology department personnel; while preserving the diagnostic value of the image, it can minimize the patients receiving radiation. In spite of the benefits of the radiation in medicine, they should be operated with caution and in compliance with the ALARA (As Low As Reasonably Achievable) code to minimize unnecessary radiation to the patient and staff. A wide range of factors in radiography is under the control of the radiology department staff; while preserving the diagnostic value of the image, it can minimize the patients receiving radiation. It is worth noting that in many cases, when an effective factor in patient radiation changes, image quality is affected in the same way. Since the last 70 years, by increasing radiographic requests, the average annual exposure of people to ionizing radiation has doubled. It is necessary to discover measures controlling the x-rays and the level of radiation exposure of people. (5) According to international radiology standards, technologists need to have the technical function and ability to carry out the affairs in their field of work; therefore, in order to achieve this, the main point is that the standards and principles are to be learned sufficiently and efficiently, and more importantly, to use the lessons properly (6). Proper and right use of individual equipment and observing the current regulations for the protection of buildings containing

generator devices or sources of ionizing radiation could highly reduce the effects and damage caused by the rays. Therefore, knowledge and application of the guidelines with radiation by the staff could play a significant role in radiation protection. If the staff lacks the necessary knowledge, as a result of improper protective behavior they might harm themselves or those who have to use radiation to diagnose and treat illness. (7) Therefore, the present study was conducted to determine the knowledge of the radiology department staff regarding principles and protective measures in Zahedan hospitals in 2016.

METHODOLOGY

The present study was carried out with the aim of figuring out the personnel knowledge of the protection principles in the radiology department of the hospitals of Zahedan in 2016. To do the research, a researcher-made questionnaire was developed by considering the rules of the Atomic Energy Organization in the field of ionizing radiation protection in three areas of individual protection, protection of radiology department and patient protection, whose validity was confirmed by the relevant experts and its reliability was approved with Alfa Cronbach 86% and then, in coordination with the head of the radiology departments of each of the hospital, the questionnaires were sent to the staff whom were asked to answer. After collecting questionnaires, the data were analyzed using SPSS software 18. According to the type of the research, the independent t-test was used to analyze and describe the data. The test was used to investigate the relationship between the personnel's degree of education and their level of knowledge regarding the protective principles of radiology department, as well as the relationship between their age and their knowledge of the principles.

RESULTS

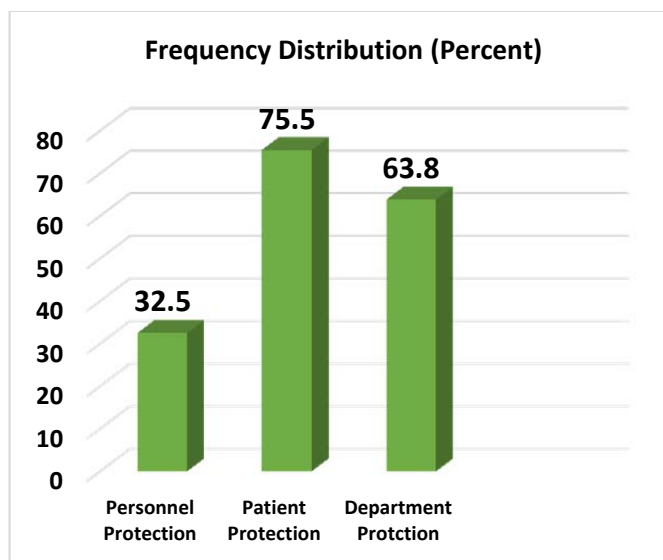
In this study, the knowledge and awareness of the radiology personnel of 7 hospitals in Zahedan were investigated. The table below displays the demographic data of 91 radiology staff members working in these hospitals, of 91 of whom, 35 were men and 56 women. In terms of their educational qualifications, 51 (56%) had associate's degree, 38 (47.8%) bachelor's, and 2 (2.1%) master's degree. Additionally, the minimum year of service for the staffs was 2, and the maximum 28 years.

Table 1: Demographic information of radiology personnel

| Demographic variable | | Number | Percent |
|----------------------|-----------|--------|---------|
| Level of Education | Associate | 51 | 56 |
| | Bachelor | 38 | 7/41 |
| | Master | 2 | 1/2 |
| Sex | Male | 35 | 4/38 |
| | Female | 65 | 5/31 |

After collecting the data, according to the type of questions and the relevant categorization, the percentage of personnel response in each of the sections (radiology personnel's knowledge on protection, patient protection and radiology department) were obtained regarding the graph below. The table below displays the response percentage of the subjects regardless their degree of education and years of service.

Frequency distribution graph of the radiology personnel's response rate to the questions



Relationship between education degree and years of service

Response rate for people with years of service:

- ✓ Under 10 years: 32%
- ✓ Between 10 to 20 years: 46%
- ✓ Between 20 to 30 years: 2/62%

There is a correlation between the response rate of personnel and their years of service ($p < 0/05$) as the more years of service the more the percentage of their responsiveness.

Relationship between educational degree and response rate

There is a relationship between the subjects' educational degree and their response percentage. People with higher educational degrees had higher percentage of response.

The table below displays the percentage of responses according to their type of degrees.

Table 2: Percentage of responsiveness to questions based on the degree

| Degree of education | Percentage | | |
|---------------------|----------------------|---------|-----------|
| | Radiology department | Patient | Personnel |
| Master's degree | 74 | 80 | 50 |
| Bachelor's degree | 62 | 68 | 24 |
| Associate's degree | 54 | 79 | 20 |

DISCUSSION

Among the most important duties of radiology technologist is the protection of the patient against unnecessary rays and preparing the highest quality intensifying screens. Having enough knowledge and up-to-date information could help him/her a lot concerning protection issues. The frequency of women and men participating in the present project were 35 men (38.46%) and 56 women (53 / 61%). Mehdipour et al. stated that 57.9% of women and 33.1% of men were reported (7). Additionally, in another study carried out by Amirzadeh et al. they stated that 53% of male personnel and 47% of women were reported (8). According to the results obtained in the present study, the percentage of answers to questions regarding personnel's individual protection is 32.5%, patient protection 75.5%, and radiology department protection is 63.8%. Mehdipour et al. stated in their study that the results indicated 78.5% of the technologists had poor knowledge, 11% had moderate and 10.5% had good knowledge (7). In another study conducted by Nohi Bezanjanji in Kerman, more than 82 percent of the personnel knew the rules of radiation protection (9). In this study, according to the results, it was reported that there was a relationship between the personnel response rate and their years of service ($p < 0/05$) and the longer their years of service, the higher their response rate. Rahimi et al. stated in their study that there was a significant difference between the years of service and the staff's level of knowledge ($p < 0/05$). (10) In this study, according to the results, by increasing the level of educational degrees, the rate of the subjects' responsiveness elevates to the questions as well. This indicates high knowledge and awareness of these individuals and their up-to-date information and knowledge concerning radiology protection. In their study, Rahimi et al. stated that in a comparative study between the bachelors and associates, the average response rate for bachelors was higher than that of associates, which indicates an increase in the staff's knowledge by increasing educational level (10).

CONCLUSION

Based on the obtained results, the level of knowledge of personnel regarding individual protection is low and requires training and protection courses. Personnel's knowledge on radiology department and patient protection is appropriate, but their level of education would be better to increase in the field. It is necessary to evaluate the knowledge of personnel on protection in the radiology department constantly in order to reduce the risks of radiation for the patients and personnel. Therefore, protection courses are required to improve the knowledge of the personnel of the hospitals of Zahedan.

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