Summary

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Application of ionizing radiation is growing in many fields especially in medicine. In the diagnostic imaging process, X-ray has a significant role in the healthcare and medicine in all countries. Usage of radiation have Several benefits that are quite well known to everybody as identify previously undetectable diseases and more accurate detection and treatment methods. On the other hand, X-ray is one of the workplaces hazards that can cause serious adverse effect and impacts and even incurable diseases for radiographers, this effects include stochastic effects as Leukemia and other cancer, DNA damage and deterministic effects as radiation dermatitis, cataracts, infertility, and organs atrophy or fibrosis (**Reed, 2019; Dehaghi et al., 2015).**

The aim of the study:

This study aimed to assess radiographers' knowledge and practices regarding occupational hazards and protective measures:

- Assessing radiographers' knowledge about radiation hazards and protective measures
- Assessing radiographers' practices regarding radiation protective measures.
- Assessing environment safety regarding radiation hazards and protective measures.

Research questions:

- What is the level of radiographers' knowledge and practices regarding radiation hazards?
- What are the protection practices among radiographers?

- Is there a relation between socio - demographic characteristics of radiographers and their knowledge and practice regarding radiation hazards.

Setting:

The study was conducted at all governmental hospitals with radiology department in Benha City including Benha University Hospital, Health Insurance Hospital, Fever Hospital, Teaching Hospital and Chest Disease Hospital.

Sampling:

Convenient sample of radiographers who are working with X-Ray devices in the above-mentioned settings. The total sample were 100 radiographers (55 in Benha University Hospital, 10 in Health Insurance Hospital, 11 in Fever Hospital, 20 in Teaching Hospital, 4 in Chest Disease Hospital.

Tools of data collection

Two tools were used in this study.

I- The first tool: Structured interviewing questionnaires, it consisted of three parts:

The first part:

It was concerned with socio- demographic characteristic of radiographers.

The second part:

It was concerned with health problems of the radiographers.

The third part:

It was concerned with radiographers' knowledge regarding radiation hazards and protective measures.

II -The second tool: Observational checklist it consisted of two parts:

The first part:

Observation checklist was designed to assess the studied radiographer's protective practices regrading uses of PPE.

The second part:

Observation checklist was designed to assess environment safety regarding radiation hazards and protective measures.

Results:

Regarding to the studied radiographers the study result revealed that; 33% of the studied radiographers aged 20 - 25,76% were male, 56% of them were married, 56% of them had children. Regarding monthly income; 52% of them had insufficient monthly income.

The study revealed that; 33% of the studied radiographers had less than 5 years of work experience, 62% of them were working 8hour/day and 28% of them received training courses.

Regarding the studied radiographers' total knowledge, the study results revealed that; there were 46% of the studied radiographers had good knowledge while 24% of them had average knowledge and 30% of them had poor knowledge score regarding radiation hazards and protective measures.

Regarding the studied radiographers' total reported practices, the result showed that; 65% of the studied radiographers had satisfactory practices, while 35% of them had unsatisfactory practices regarding radiation protective measures.

Regarding environmental safety practices, the study results showed that; 60% of the studied hospitals had appropriate radiation warning signs,60% of them had visible

signal for radiation, all of these didn't have audible signal, 80% of these maintained radiation equipment regularly, had perfect glass window, all hospitals had intact leaded wall and intact radiation room door.

The results showed that; there were statistically significant relations between the total knowledge score of the studied radiographers and their sex, experience and training courses ($p < 0.05$).

The result revealed that; there were statistically significant relations between the total practices score of the studied radiographers and their age and year of experience ($p<0.05$)

Finally, the study result revealed that; there was positive correlation between total knowledge score of the studied radiographers and their total practices score.

Conclusion

Based on the results of the present study and research questions, the study concluded that around one third of radiographers age ranged between 20 -25 years, less than half of radiographers had good knowledge regarding radiation hazards and protective measures, more than half of radiographers had satisfactory practices regarding radiation protective measures. There were statistically significant relations between the radiographers' total knowledge score and their sex, years of experience and training courses. Also, there were statistically significant relations between the studied radiographers' total practices score and their age and year of experience. In addition, there was positive correlation between total knowledge score of the studied radiographers and their total practices score regarding radiation hazards and protective measures.

Recommendations

1-Health educational program should be developed and implemented on regular basis to increase radiographers' knowledge and practices regarding radiation hazards and protective measures, focusing on

- Radiation hazards.
- Protective measures of radiation.

2-Further researches in large sample to assess radiographers' knowledge and practices regarding radiation hazards and protective measures.

3- Further researches in the private radiology department to assess radiographers' knowledge and practices regarding radiation hazards and protective measures.

4- Further researches should be done on using of available personal protective equipment.