The Effect of Current Protective Tools in Reducing the Effects of Radiation on People

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Abstract

The current study aims the impact of the tools currently used in radiation on humans, the extent of resistance of these tools such as (ray shield) to human health, what are the tools used for radiation to protect humans? A questionnaire was prepared via Google Drive and distributed to the population aged 25-55 years, men and women in city of mecca. As for the questionnaire, it was distributed via the social networking program (WhatsApp) for the purpose of distancing for fear of the presence of the Corona virus. 400 questionnaires were distributed, 390 responses were obtained via email to the principal researcher. this study concluded that the person in charge of radiology has a major role in guiding and guiding patients about the danger of radiation 100%, and that the doctor can reduce the rate of exposure to it by 50%.

Keywords: the effect, of current protective tools, in reducing, the effects, of radiation on people.

1. Introduction

Radiology or radiology is a branch of medicine that uses medical imaging techniques to establish appropriate diagnosis and sometimes treatment. At the beginning of the emergence of this science, it was limited to the use of devices that produce X-rays in imaging techniques, but at the present time this science has expanded to include other devices such as ultrasound imaging, computed tomography, and magnetic resonance imaging. (1) A radiology technician or technician (diploma) is a person who works on medical devices of various types, such as magnetic resonance imaging (M.R.I.) devices. Radiographers, also known by other names such as diagnostic radiographers and radiologic technologists (2). professionals working in radiology centers should at all times resort to radiological protection principles and carefully avoid

exposure to radiation, and also protect the patients from unnecessary exposure to radiation. The simple, effective and low-cost way to protect occupationally exposed individuals as well as the patients submitted to ionizing radiation, is the use of radiation protection gear (RPG). It is important to clarify the use of the RPG acronym. It is used in substitution of "individual protection equipment" as, according to the Associação Brasileira de Normas Técnicas (ABNT) (Brazilian Association of Technical Standards) (3) and the regulating Standard No. 6(4), the term "gear" is utilized to designate protection of the whole body and also of the chest, as in the case of lead aprons. the other types of equipment used for radiation exposure protection is not mentioned in this regulating standard, with the sole exception of lead gloves. Even so, in order to be considered individual protection equipment according to the law, lead aprons and gloves must be compliant with rigorous manufacturing criteria, and only after testing and certification by the Ministério do Trabalho e Emprego (MTE, 2006) (4) (Ministry of Labor and Employment) they can receive the denomination seal. For such reason, the herein utilized acronym RPG comprises all accessories for radiological protection such as: goggles, gloves, aprons, thyroid protection shield, gonadal protection shields, vests and skirts, among others. Vests containing lead were used to protect against radiation, and researchers tried to use other materials to reduce the weight of the vest, but their effectiveness was less, so specialists returned to using lead for protection (5). One of the ways to reduce the incidence of radiation is to stay away from the source of radiation. The farther a person is from the source of radiation, the less he will suffer from it. In addition to the special structures for providing radiation therapy and what concerns the therapists and their workers in terms of radiation protection, a special department in the hospital operates on the issue of radiation protection and raising awareness among workers in this field. While the issue of evaluating the benefit to the resulting risks arises, as illness increases and health improves, while the risk of radiation injury increases for workers. The Prevention Department ensures that radiation is performed only on site, as it helps in scheduling a radiation regimen that suits the patient's condition.

2. Material and Methods:

The study began in (the city of Mecca in the Kingdom of Saudi Arabia), and the study ended with writing the data collection in September 2024. The researcher used descriptive analysis, an approach that uses quantitative or qualitative description of the social phenomenon (the effect of current protective tools in reducing the effects of radiation on people) and the variable. The independent variable (the effect of current protective tools in reducing the effects of radiation on people globally) and the dependent variable (the effect of current protective tools in reducing the effects of radiation on people locally). This type of study is characterized by analysis, reason, objectivity, and reality. It is also concerned with individuals and societies, as it studies the variables and their impact on the health of the individual, society, and the consumer, and the spread of diseases and their relationship. For demographic variables such as age, gender, nationality, and marital status. Status and occupation (6), and use the Excel 2010 Office suite pie chart to sort the results (7). the questionnaire consists of questions, all of which are closed-ended.

3. Results and discussion:

The percentage of approval to participate in the questionnaire was 100%, and as for the percentage of participants' ages, it was as follows: from the ages of 25-34 years, 0%, and from the ages of 35-55 years, all of them were 50%. As for the gender of the participants, they were all males, at a percentage of 100%. Their nationality is also 100% Saudi men and women. As for the educational status, it was as follows: primary, middle, university, and postgraduate or doctoral studies, 0%. As for the secondary stage and diploma, it was 50%. As for their professions, they were all employees working for the Ministry of Health, 100%. As for their responses to the questionnaire questions, they were as follows: First question: The first question: Can high doses of scattered radiation cause severe illness? Yes 100%. The second question: Radiation protection is the science of protecting humans from the effects of ionizing rays, whether they are elementary particles such as protons and neutrons or high-energy electromagnetic rays? Same as previous answer. Question Three: Exposure to very high doses of radiation may lead to disruption of tissue and organ functions and severe effects? Same as previous answer. Question Four: Must the appropriate working levels for ambient radiation and pollution measurement results be determined? Yes and no 50%. Question five: The doctor removes as much internal (inhaled or swallowed) and external radioactive materials as possible and treats the symptoms and complications of radiation injury? I don't know 100%. Question Six: The radiation diet aims to reduce the doses received by patients to a minimum while ensuring the effectiveness of diagnosis? Yes 100%. Question 7: Can doctors reduce exposure time to a minimum? Yes and no, the same percentage is 50%. Question Eight: Placing protective screens between radioactive sources and any person exposed to radiation, will this help reduce the radiation dose? Question 9: Can the doctor or responsible person who works with x-rays keep people at a safe distance from the source? Final question: The competent person responsible for radiation protection is responsible for ensuring that people and the environment are protected from the harmful effects of ionizing radiation, and in particular, he or she must take measures to reduce radiation exposure, such as using lead shielding or maintaining a certain distance from radiation sources? All previous questions had the same answers: yes, 100%. (table.no.1)

Table.1: the effect of current protective tools in reducing the effects of radiation on people according to the opinions of participants in a questionnaire

The effect of current protective tools in reducing the effects of radiation on people	Yes	No	I don't know
Radiation protection is the science of protecting humans from the effects of ionizing radiation, whether elementary particles such as protons and neutrons or high-energy electromagnetic radiation?	100%	0%	0%
The radiation diet aims to reduce the doses received by patients to a minimum while ensuring the effectiveness of the diagnosis?	100%	0%	0%
Can doctors reduce exposure time to a minimum?	50%	50%	0%
The competent person responsible for radiation protection is responsible for ensuring that people and the environment are protected from the harmful effects of ionizing radiation. In particular, he or she must take measures to reduce radiation exposure, such as using lead shielding or maintaining a certain distance from radiation sources.	100%	0%	0%

There is a study related to this matter entitled (Utilization of radiation protection gear for absorbed dose: an integrative literature review reduction) (8) published in 2011 by Flávio Augusto Penna Soares .Concluded that As regards occupationally exposed individuals, continued education on the subject is recommended at the centers, so that the health professionals

become increasingly aware of the relevance of the utilization of such garments for protection of their own health and safety against ionizing radiations at work.

4. Conclusion:

The competent person responsible for radiation protection is responsible for ensuring that people and the environment are protected from the harmful effects of ionizing radiation. In particular, he or she must take measures to reduce radiation exposure, such as using lead shielding or maintaining a certain distance from radiation sources.Yes 100%, Can doctors reduce exposure time to a minimum? 50%. The current study concluded that the person in charge of radiology has a major role in guiding and guiding patients about the danger of radiation 100%, and that the doctor can reduce the rate of exposure to it by 50%.

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