International Journal of Pharmaceutical Research and Applications
Volume 7, Issue 3 May-June 2022, pp: 264-270 www.ijprajournal.com ISSN: 2456-4494

A cross-sectional study -Evaluation of Knowledge, Attitude and Practices Regarding Medical Radiation Hazards and Protection among health-care Providers in hospital.

Mrs. Shivani Sharma1, Prof. Dr. Dinesh Kumar , Mrs. Manju Rajput
[1,] *Assistant Professor, Noida International University, Gautam Budh Nagar, Uttar Pradesh*
[2] *Director School of Nursing, Noida International University, Gautam Budh Nagar, Uttar Pradesh*
[3] *Professor, Noida International University, Gautam Budh Nagar, Uttar Pradesh*

Submitted: 01-05-2022 Accepted: 10-05-2022

ABSTRACT: Health care providers are at risk of medical radiation hazards because of inappropriate use can leads to unintended or unnecessary radiation exposure with potential health hazards for both patient and the health care provider, and radiation protection is highly important and is one of the public health concern to control and minimize the health hazards while maximising the benefit ,this study is aimed to evaluate the knowledge, attitude and practice regarding medical radiation hazards and protection among health care providers. The research approach used is quantitative; this is because the data obtained is a quantifiable data. The information collected is from sampling methods from an online validated questionnaire. The method of review is based on the PRISMA ,Data analysis was done using descriptive and inferential statistical methods to meet the objectives of the study. Findings were presented in the form of Tables and figures. Using SPSS and EXCEL .Overall, 144 participants consisting of 86(59.72%) men and 58(36.8%) women completed the survey. Among the participants, 36 (25%) were married. In total, 92 (63.89%) had a degree in radiology and 52 (36.11%) were certified in other medical fields. The educational qualification of the participants ranged from associate to professor. About 108 (69.5%) health-care workers had a bachelor degree, 63 (17.3%) had less than a bachelor degree, and 48 (13.2%) had a master to professor degree. Data from this study suggest that the length of occupational radiation exposure has been expanded per better practice by health staff. The radiation practitioners demonstrated a better understanding of the RP in their sample, relative to the general public and to medical doctors who did not exposure.By comparison, the educational history of other studies was not linked to conformity with healthy practice. The results of this study indicated that the RP-KAP of healthcare workers to protect them against radiation was reasonable. Health-care workers with a degree in radiology had a higher RP-knowledge. Hence, it is strongly recommended that medical radiation workers take pre service RP training. Participation in in-service training programs creates and maintains a positive RP-attitude.

KEYWORDS: Medical radiation hazards, radiation protection, Health care providers.

I. INTRODUCTION

Radiation is a part of man`s physical condition and is extensively arranged into ionizing and non ionizing radiation. The most vigorous structure and of significant general wellbeing noteworthiness is ionizing radiation.[1] In ordinary conditions, 80% of our introduction to ionizing radiation originates from regular wellsprings of which radon gas is by a long shot the most noteworthy, while the other 20% originates from manmade sources, principally clinical X rays.[1,2] Utilization of ionizing radiation in clinical imaging for indicative and interventional purposes has risen drastically lately with an attending increment in the presentation of patients and wellbeing laborers to radiation risks, clinical and dental X rays currently establish the significant manmade wellsprings of radiation exposure. [3]

While reports from contemplates showed emotional ascent in the commonness of adverse wellbeing impacts following exposure to ionizing radiation in recent decades. [3,4]Although the antagonistic wellbeing impacts of ionizing radiation, for example, cataracts, skin erythemia, and malignant growths among others, are known to fluctuate as indicated by dose and exposure duration, it is accepted that there is no protected portion of ionizing radiation.[4]

International Journal of Pharmaceutical Research and Applications
Volume 7, Issue 3 May-June 2022, pp: 264-270 www.ijprajournal.com ISSN: 2456-4494

The point of convergence for radiation safety is dependent on this supposition that is 'the ALARA idea, this involves radiation exposure be diminished to 'As Low As Reasonable as Achievable (ALARA)' however not surpassing the breaking point on powerful dose suggested by the Global Commission on Radiological Protection[2]

Radiation protection is the science and craft of shielding individuals and the earth from the hurtful impacts of ionizing radiation. It is additionally portrayed as all exercises coordinated towards limiting exposure of patients and faculty staff during x rays exposure.[5]Radiography such as Mammography, computed tomography, conventional x rays, fluoroscopy, ultrasound, radiation therapy, nuclear medicine, and magnetic resonance imaging.[5,6]

Radiography is a basic apparatus of modern day medicine. In the emergency department, radiologists, radiologists, nuclear medicine physicians, and others involved in X-ray and computer tomography (CT) scanning procedures are at higher risk of radiation exposure than the general emergency department population. Become. [5,6,7]

Treatment of a patient relies upon the exact and exact creation of radiographic pictures and effective translation of these pictures.[8] Different abnormalities and conditions can be dealt with when the specific examination is known to the doctor. Along these lines, a health care provider must be accomplished and prepared to accomplish this objective.[9] An exceptionally qualified and gifted healthcare provider is a huge individual from the health workers. He could offer suitable types of assistance utilizing imaging methods and assessing radio diagrams of specialized quality.[9,10]

Likewise, even though the low portion of radiation exposure may cause no perceptible harm, the likelihood of chromosomal harm in the germ cells, with the outcome of changes offering to ascend to hereditary harms (stochastic impacts), can make such dosages critical for the enormous population. Likewise, the requirement for radiation safety exists, in every single clinical department and for all radiation technique types.[10,11]

Numerous researches demonstrate that health care workers are uninformed of the dangers related to the utilization of radiation. Doctors who are liable for mentioning radiological assessments will, in general, belittle the real dosages included, have helpless information about the potential dangers to the health of populaces, and don`t talk about the possible dangers of CT examinations with their patients.[1,2,4,11,12]

An exploration done in Australia among health specialists working in the accident and emergency unit evaluated health workers specialists' information on radiation exposure for clinical imaging, and it was seen as poor, and whether they would advise their patients regarding the dangers of radiation exposure fluctuated with the clinical situation. Overall, these experts did not believe in the overuse of radiation and occasionally took advantage of the indicator images and the dangers they pose. [13] Underestimating doses and hazards may cause experts to refer to more radiographic images than if they had accurate information. [14] Key issues addressed by the World Health Organization (WHO) include in-service training, provision of guidelines and technical documentation, and promotion of acceptance and compliance with safety principles. [1416] WHO requires significant investment to equip workers with the necessary skills, attitudes and expertise to minimize the risk of radiation and ensure safe and effective medical care. I think it is. [6] Healthcare professionals often do not have sufficient knowledge of the risks of radiation exposure and the criteria that should be considered to minimize these risks. Practice has been found among graduate cardiologists. Compliance with RP practices. A possible explanation is that a negative or neutral scientific attitude towards the practice of RP impedes the practice of meaningful knowledge [1317].

Therefore, all occupationally exposed health care workers should seek to adopt current RP improvements and apply their knowledge to protect themselves and their patients from the adverse effects of ionizing radiation. be. There are many studies around the world that have evaluated the RP Knowledge, Attitude, and Practice (RPKAP) of different medical professionals working in the radiation environment and have produced different results. [1417]

However, there are few studies in this area in Iran, especially those related to KAP of radiation workers to protect themselves from the harmful effects of ionizing radiation. Therefore, this study aims to assess RP knowledge, attitudes, and adherence to practice among healthcare professionals working in a teaching hospital in Greater Noida, Uttar Pradesh. 1.2 Survey requirements

Radiation protection has been a major concern since the early days of radiography. [3] And medical imaging technology continues to revolutionize, and the regulations required for its safe use are important issues. Evaluating the

International Journal of Pharmaceutical Research and Applications
Volume 7, Issue 3 May-June 2022, pp: 264-270 www.ijprajournal.com ISSN: 2456-4494

knowledge of radiation-handling healthcare professionals and conducting radiation safety courses will help reduce the exposure of patients and staff to ionizing radiation. Intervention cardiologists are one of the two professions most likely to be exposed to high doses of radiation during routine examinations. [1,3]

World Health Organization 1 points out the need for specific training in interventional radiology in addition to basic training and recommends continuous training and regular re-education courses. The International Commission on Radiological Protection (ICRP) points out that intervention procedures are complex and tend to be operator-dependent. The person conducting the study must be properly trained in both clinical skills and knowledge of RP. [13]

A study of doctors working in the emergency department in Australia found that the emergency physicians' knowledge of radiation exposure to medical images was inadequate and that clinical scenarios could inform patients about the risk of radiation exposure. Overall, these physicians underestimated the radiation exposure and associated risks of commonly used diagnostic imaging. Underestimating dose and risk may require physicians to require more diagnostic imaging than accurate knowledge [12.18].

II. METHODOLOGY

The study approach used was quantitative and the study was conducted at Uttar Pradesh healthcare provider cancer hospitals. The sample was calculated using Cochran's formula. The criteria for sample selection were those in the 1950s who participated in the data collection and those who wished to participate. A self-designed questionnaire validated by a medical professional was used as an adjunct. The questionnaire was designed to provide information on the socio-demographics, knowledge, attitudes, and practices of healthcare providers related to the dangers and protection of medical radiation. The questionnaire consists of four questionnaires; the first part is social demographic data, then knowledge, attitude and practice. Pilot Study the results of the 20 respondents shown in the outline and guide provided by the school were used as the pilot study. The current results provide updated information as the necessary modifications made during the presentation have been implemented. The data was collected via an online Google Form that was created and shared with the above eligible respondents who met the selection criteria.

III. RESULT ANALYSIS

In certain medical practices, the continued tendency towards the use of radiation equipment exposes healthcare professionals to health risks. [20] As a result, radiation protection remains a concern in the workplace. [21] The main purpose of this study was to identify the RPKAP and radiation hazards of health workers exposed to radiation from work in order to protect themselves from radiation. Based on the analysis, RPKAP was appropriate among the analysed workers. The majority of participants achieved a successful self-defence score when assessing RP attitudes. It ensures that the health community demands good habits. Based on current results, Flôr and Gelbcke found that nurses working in catheterization laboratories ignored the risk of radiation sensitivity and did not follow their self-guidelines. Another study of nurses' perceptions of personal safety documents misunderstandings about self-protection from radiation exposure. [23] Human failure to detect radiation through sight and touch can be attributed to the myths surrounding radiation. In addition, all adverse effects of radiation are usually caused by prolonged contact, eliminating the need for the operator to deal with ionizing radiation contamination. It can contribute to either serious neglect and non-compliance with safety regulations, or radiation anxiety and fear.

All of these factors adversely affect the quality of work and the safety of radiation staff and patients. [24] As with recruitment, adherence to RP knowledge and RP practice was sufficient. However, that percentage still shows a high level of non-compliance. This unacceptable RPKAP means that radiation workers were unable to effectively protect themselves from ionizing radiation. Several studies have documented RP knowledge and practice flaws among different healthcare professionals who use ionizing radiation as part of their work. [3,12,17]

Regarding health statistics, Paolicchi et al. Radiation workers have found that they need to improve their awareness of RP. [25] Rassin et al. Only 40% of nurses and 75% of doctors who monitor ionizing radiation in catheterization facilities were very cautious about protecting themselves from radiation, according to the report. In contrast to our study, the analysis of Enabrele and Igbinion revealed a low level of RP awareness among dental students and a slight improvement in experience. By comparison, radiologists from other studies were better informed about protection than their experience. [13,28] Shahetal. The main feature

International Journal of Pharmaceutical Research and Applications
Volume 7, Issue 3 May-June 2022, pp: 264-270 www.ijprajournal.com ISSN: 2456-4494

of radiation science medicine has been found to be conformance to the principles of RP [29]. On the alternative hand, step one to adopting and adhering to the standards and policies relevant to any surroundings includes an ok cognizance of mechanisms and provisions [30]. When assessed as inadequate in know-how, radiation people want schooling at the diagnostic and healing use of ionizing radiation in medicine [29]. Findings from numerous research have emphasised non-stop occupational training for clinical radiation people to enhance their know-how and capacities of RP troubles and as it should be manipulate radiation publicity.[23,25,31]

Although maximum of our contributors have laboured within side the health centre for over the last decade, their attendance became now no longer notably associated with their know-how and exercise. Additionally, almost all contributors enrolled in ongoing training in some other examine however compliance with protection requirements became nevertheless small.[28] The examiner became surprising and troubling and confirmed that previous in-provider fitness training became now no longer efficient. It appears the contents of the instructions had been now no longer absolutely applicable to contributors` academic desires or their fine became now no longer appropriate, so that they couldn't have an impact on radiation people` know-how and exercise.

In assessment with the male radiation people, the girls have stated stepped forward RP exercise, that is steady with the findings stated through Tavakoli et al. and Salihet al.[14,15]. As predicted, many that graduate from the sector of radiology have extra cognizance than folks who graduate from different fields of medicine. Mihai et al. received a similar outcome. The radiation practitioners established a higher know-how of the RP of their sample, relative to the overall public and to clinical docs who did now no longer exposed.[33] By assessment, the instructional records of different research became now no longer connected to conformity with wholesome exercise[28].

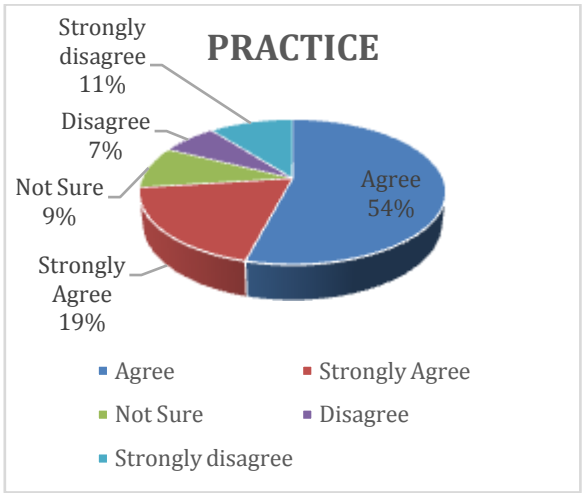
Data from this examine propose that the duration of occupational radiation publicity has been accelerated in line with higher exercise through fitness team of workers. This end result became well suited with an in advance examine that discovered that years of provider as a radiologist had sturdy correlations with wholesome practices.[17]

In our examine, we are able to finish that contributors with fewer years of enjoy with radiation had a worse overall performance. Another examine amongst invasive cardiologists confirmed that contributors with running enjoy of <10 years had poorer know-how and exercise of radiation protection.[12]It is troubling due to the fact insufficient output increases the probability that every one sufferers and fitness team of workers might also additionally go through radiation publicity. There can be a loss of healthcare personnel, resource, or equipment, a low diploma of delight on the administrative centre and an organization`s commitment, loss of employment or different motivational elements, irrelevant schooling and training, or a want to check and replace the curricular of universities, as motives for bad overall performance for personnel with fewer years of enjoy. Such variables can be maximum sincerely interrelated, and the achievement of fitness care team of workers may be tormented by a lot of established factors. The higher the education level of the participants in this study, the higher the knowledge score. We believe that higher education in medicine is associated with seeking higher knowledge of radiology and up-to-date knowledge based on educational needs, as well as working in a radiation environment. However, there was no link between RPattitude and practice and education levels. In the Reagan and Slechta study, the achievement of higher education was not associated with RP practice. [34]

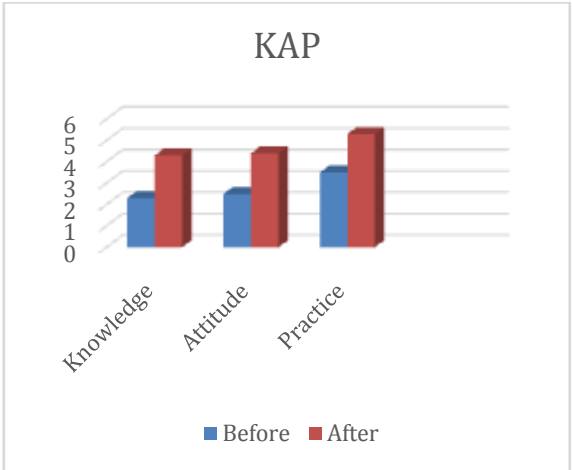
Trainers have a college because the background of the radiant environment and highly qualified radiologists can play an important role in the training process for new colleagues and individuals who may not have a bachelor's degree in radiation. You can have the opportunity to empower experienced radiologists with a degree in radiology to contribute to their knowledge. Educational services help build a healthy self-care mindset. In other words, in the radiation setting, they promote the philosophy of self-care. The culture of self-care raises the importance and need for KAP in the field of self-care for radiation so that people can recognize the role of continuing education in health promotion. This study had some weaknesses, but some advantages. Most of the research on ionizing radiation focuses on the health of the patient and evaluates its therapeutic effect and side effects on the patient. A limited amount of literature investigates the risk of occupational radiation exposure. Therefore, this study attempted to include "risk of occupational exposure" as an aspect of radiation research that has received relatively little attention.

International Journal of Pharmaceutical Research and Applications
Volume 7, Issue 3 May-June 2022, pp: 264-270 www.ijprajournal.com ISSN: 2456-4494

81% of the correspondent either agree or strongly agree with the questions asked, which indicates that they have in-depth knowledge regarding the medical radiation hazard. The 10% disagree.



The practise among the health care workers on the use of protective equipment is high compared to the number of responses that agree or strongly agree to the questions asked



International Journal of Pharmaceutical Research and Applications
Volume 7, Issue 3 May-June 2022, pp: 264-270 www.ijprajournal.com ISSN: 2456-4494

Even though the response regarding their KAP is high, the participants are educated more on the protection against medical radiation hazards and hence there is an increment in related to it.

IV. CONCLUSION

The results of this study showed that medical personnel's RPKAP was appropriate for radiation protection. Healthcare professionals with a degree in radiology had a high level of knowledge of RP. Therefore, it is highly recommended that a radiologist complete the RP preparatory training. Participation in in-service training programs creates and maintains a positive RP attitude. Establishing a culture of self-care is an important factor in improving performance. Trainers have a college because the background of the radiant environment and highly qualified radiologists can play an important role in the training process for new colleagues and individuals who may not have a bachelor's degree in radiation. You can have the opportunity to empower experienced radiologists with a degree in radiology to contribute to their knowledge. Educational services help build a healthy self-care mindset. In other words, exposure settings promote the philosophy of self-care. The culture of self-care raises the importance and need for KAP in the field of self-care for radiation so that people can recognize the role of continuing education in health promotion.

REFERENCES

[1]. M. M. Якимець, М. З. Безкоровайна, and М. Я. Пинда, “Порівняльний Аналіз Стану Тканин Пародонта У Хворих На Цукровий Діабет 1 Та 2 Типів,” Clinical Dentistry, vol. 11, no. 2, pp. 6–10, 2014, doi: 10.11603/2311-9624.2014.2.3210.

[2]. L. T. Dauer, R. H. Thornton, J. L. Hay, R. Balter, M. J. Williamson, and J. S. Germain, “Fears, feelings, and facts: Interactively communicating benefits and risks of medical radiation with patients,” American Journal of Roentgenology, vol. 196, no. 4, pp. 756–761, 2011, doi: 10.2214/AJR.10.5956.

[3]. F. Ria et al., “Awareness of medical radiation exposure among patients: A patient survey as a first step for effective communication of ionizing radiation risks,” Physica Medica, vol. 43, no. June, pp. 57–62, 2017, doi: 10.1016/j.ejmp.2017.10.014.

[4]. A. Sulieman et al., “Assessment of medical radiation exposure to patients and ambient doses in several diagnostic radiology departments,” Radiation Physics and Chemistry, vol. 140, no. April, pp. 202–206, 2017, doi: 10.1016/j.radphyschem.2017.04.015.

[5]. F. A. Mettler et al., “Medical radiation exposure in the U.S. in 2006: Preliminary results,” Health Physics, vol. 95, no. 5, pp. 502–507, 2008, doi: 10.1097/01.HP.0000326333.42287.a2.

[6]. H. G. Kang, J. J. Song, K. Lee, K. C. Nam, S. J. Hong, and H. C. Kim, “An investigation of medical radiation detection using CMOS image sensors in smartphones,” Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, vol. 823, pp. 126–134, 2016, doi: 10.1016/j.nima.2016.04.007.

[7]. E. B. Zuba, W. Francuzik, P. Malicki, A. Osmola-Mańkowska, and D. Jenerowicz, “Knowledge about ultraviolet radiation hazards and tanning behavior of cosmetology and medical students,” Acta Dermatovenerologica Croatica, vol. 24, no. 1, pp. 73–77, 2016.

[8]. K. A. Algohani, A. A. Aldahhasi, and A. H. Algarni, “Awareness of Radiation Protection Measures among Radiologists and Non-Radiologists,” The Egyptian Journal of Hospital Medicine, vol. 70, no. 3, pp. 371–375, 2018, doi: 10.12816/0043471.

[9]. M. K. Saeed, H. Al-shaari, M. M. S. Almarzooq, S. A. Alsareii, S. A. Aljerdah, and M. S. Al-ayed, “Radiation awareness among physicians about the hazards of radiological examinations on the health of workers and their patients in Saudi Arabia,” Journal of Radiation Research and Applied Sciences, vol. 11, no. 4, pp. 299–304, 2018, doi: 10.1016/j.jrras.2018.04.001.

[10]. W. J. Lee, S. Ko, Y. J. Bang, E. S. Cha, and K. M. Lee, “Mortality among diagnostic medical radiation workers in South Korea, 1996-2015,” Occupational and Environmental Medicine, vol. 75, no. 10, pp. 739–741, 2018, doi: 10.1136/oemed-2018-105019.

[11]. S. Mynalli, B. N. Biradar, R. S. Basti, and A. V. Braggs, “O riginal R esearch A rticle Evaluation of Awareness on Radiation Protection and Hazards among Paramedical

Personnel Working in Radiology Department of a Teaching Hospital," International journal of cotemporary medicine surgery and radiology, vol. 2, no. 4, pp. 158–163, 2017.

[12]. R. P. Chhetri, "Background Radiation: Detection, Measurement and Hazards," Himalayan Physics, vol. 6, pp. 119–122, 2017, doi: 10.3126/hj.v6i0.18375.

[13]. A. Hamarsheh and A. Amro, "Knowledge and awareness of radiation hazards among Palestinian radio technologists," Eastern Mediterranean Health Journal, vol. 23, no. 8, pp. 576–580, 2017, doi: 10.26719/2017.23.8.576.

[14]. G. Latini, L. Dipaola, M. Massaro, M. G. Andreassi, S. Rocchiccioli, and E. Picano, "Potential Health Hazards for Cumulative Exposures to Phthalates and Ionizing Radiation in High-Risk Pediatric Population," Mini-Reviews in Medicinal Chemistry, vol. 17, no. 16, pp. 1502–1506, 2017, doi: 10.2174/1389557516666161031130200,