

**Title: Ensuring radiation safety: Evaluating dose and compliance among medical staff at King Faisal Medical Complex, Saudi Arabia**

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**Abstract: Background:** Radiation is an integral part of routine medical practice, but it carries a risk to the health of medical staff. Hence, it should be assessed periodically. The study's goal was to quantify the levels of radiation exposure for medical staff at King Faisal Medical Complex (KFMC), Taif City Saudi Arabia, and to assess their radiation protective procedures in practice.

**Methods:** The study looked at the thermoluminescence dosimeters (TLDs) records of 50 medical professionals who were exposed to radiation while working at KFMC from 2019 to 2020 in Taif city, Saudi Arabia. In Riyadh, radiation exposure is read from skin TLDs using Harshaw model 6600 plus detectors. The Excel software was utilized to process the obtained data for calculating effective doses. A questionnaire was also distributed to the medical staff to assess their radiation protection procedures. The Statistical Package for Social Sciences (SPSS) program version 23 was used to analyze the obtained data.

**Results:** The mean annual effective doses of the medical staff in 2019 and 2020 were determined to be 1.14 mSv and 1.4645 mSv, respectively, with no significant difference in effective doses between males and females in either year. The socio-demographic features of the medical personnel were examined, and the findings revealed that the majority of participants were male radiological technologists. The rate of adherence to radiation protection techniques was 68%, with a normally distributed dispersal. The amount of adherence varied significantly depending on nationality, occupation, and academic qualification.

**Conclusion:** According to the research, the mean annual effective dosage for medical professionals at KFMC was significantly below the recommended level, indicating satisfactory compliance with the ALARA radiation safety concept.

**Key words:** ALARA; Effective dose; Medical staff; TLDs.

<https://pubmed.ncbi.nlm.nih.gov/38870555/>  
[DOI: 10.1016/j.apradiso.2024.111386](https://doi.org/10.1016/j.apradiso.2024.111386)