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**Assessment of radiation dose to patients undergoing fluoroscopically guided orthopedic procedures at Muhimbili orthopedic institute in Tanzania**

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In Tanzania, the X-ray fluoroscopy modality is largely applied in operating theatres for orthopedic surgery procedures to view muscles or bone fractures and guide fracture treatments. The increasing utilization of this potential high dose imaging modality and variation of exposure parameters during guided operational procedures have raised concerns to individual patient and the public about radiation health risks; such as cancers. In light of these health risks, it was considered essentially to assess radiation dose to patients undergoing fluoroscopically guided orthopedic procedures at Muhimbili Orthopedic Institute in Tanzania. A total of 72 adult patients were investigated. The selected procedures were dynamic hip screw (DHS), lumbar spine procedures (LSP) and thoracic spine procedures (TSP). In all these procedures, both patient demographic data and exposure parameters were obtained. The observed patient dose variations were mainly attributed to number of radiographic images, kV and mA, a strong positive correlation between KAP values and number of radiographic images for all procedures was obtained. Monte Carlo simulation was used to obtain the patient organ dose and effective dose. The mean patient organ dose (in mGy) were 0.15, 0.54 and 1.42 for LSP, DHS and TSP respectively while the mean effective dose (in mSv) were 0.27, 0.47 and 2.70 for LSP, DHS and TSP respectively. The current study demonstrates a relatively higher dose (mSv) for TSP procedures and lower dose (mSv) for DHS and LSP procedures than international diagnostic levels. The findings from the current study highlight a potential for non optimized procedures at the Institute. Thus, it is recommended to establish written exposure protocols to reduce the dose.