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Computed Tomography Dose Level in Selected Five Principal Hospitals in Ethiopia

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BACKGROUND: X-ray Computed Tomography dose levels have been varying among modalities and scanning body regions due to the absence of an incessant routine follow-up. Thus, the study aimed to compute the dose index discrepancies in Ethiopia for the most recurring scan protocols (head, chest, abdomen, and pelvis).

METHODS: Due to the rare existence of functional CT scanners in Ethiopia, a purposive sampling method was employed to select the hospitals. From the selected hospitals, 1,385 (249 heads, 804 chests, 132 abdomens, and 200 pelvis) standard dose metric values were collected from December 2019 to March 2020. Patients' DLP was computed into a mean value using IBM SPSS Statistics 20 software. From the mean DLP, we can compute the effective dose.

RESULTS: Patients' dose level disparity was observed in this study though it is below the ICRP standard level for all body regions except for pelvis DLP (593.37 mGy-cm) at Black Lion. The dose level for the head and chest are computed within the recommended level at all hospitals. Effective doses for the pelvis at four hospitals (Teklehaimanot, Black Lion, ALERT, Paul's, and Ayder hospitals) were computed as 6.45, 8.90, 5.08, 6.54, and 6.84 mSv respectively, and the effective doses for abdomen at Ayder Hospital was obtained to be 8.90 mSv, which is above the recommended value.

CONCLUSION: X-ray CT scanners are somewhat properly functioning although some sort of justification and optimization for pelvis and abdomen examinations are strongly recommended to implement as low as reasonably achievable principle.

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