

Abstract:

This study deals with evaluation of pediatric patient dose received by patients undergoing radiological examinations. Radiation doses to patients from chest X-rays radiography, which is the most common pediatric X-rays examinations were studied in two hospitals Khartoum hospital (KH), and Omdurman hospital (OH), in Khartoum state, Sudan. The ESD values was measured, analyzed and compared to those reported by the European guidelines on quality criteria for diagnostic radiographic images EUR 16260EN. Entrance surface dose (ESD) was determined from exposure settings using DosCal software. Totally, 50 patients were included in this study. Mean ESDs obtained from for pediatric chest radiography in (KH) hospital recorded in this work was 0.0542 mGy, and .0487 mGy for (OH) hospital. The mean ESDs per chest radiographic image ranged between 0.054 and 0.031 mGy in (KH) and (OH) respectively per exposure, which is slightly lower than the corresponding values reported in the DRLs reported in European guidelines on quality criteria for diagnostic radiographic images EUR 16260EN. Patients doses were high in departments using single-phase generators compared to those using constant potential. The results presented in this work will serve as a baseline data needed for deriving reference doses for pediatrics X-rays examinations in Sudan. The mean organ equivalent dose assessed from ESDs measured values for (KH) and (OH) using CHILDOSE (NRPB-SR279) to lung, breast, thyroid, liver, kidney, bladder, stomach and testis were 0.022, 0.038, 0.026, 0.014, 0.001, 0.006, 0.00131 and 0.00002 mSv for (KH), 0.0121, 0.0224, 0.0149, 0.008, 0.001, 0.0035, 0.006 and 0.00007 mSv for (OH) respectively. The overall effective doses obtained from this study were 0.0092 and 0.0053 mSv for (KH) and (OH) respectively.