

JOURNAL
OF
CLINICAL
AND
HEALTH SCIENCES

JCHS

SUPPLEMENTARY ISSUE

MARCH 2026
VOLUME 11 ISSUE 1 (SUPPLEMENTARY)



Fakulti
Sains Kesihatan



EMERGING TRENDS
IN MEDICAL IMAGING:
FROM PATIENTS TO PIXELS
SYMPOSIUM

Official Journal of
Faculty of Medicine
Universiti Teknologi
MARA



Copyright©2016 Faculty of Medicine. All rights reserved.

eISSN-0127-984X

ETJ004

Scattered Radiation Dose Mapping Using Personal Electronic Dosimeter in Mobile Fluoroscopy Imaging

Mohamad Hakim Suhaimi, Farah Wahida Ahmad Zaiki

Department of Diagnostic Imaging and Radiotherapy, Kulliyah of Allied Health Sciences, International Islamic University, Malaysia.

Corresponding author: Farah Wahida Ahmad Zaiki

Email: farahzaiki@iium.edu.my

Introduction: Mobile fluoroscopy, particularly utilizing C-arm imaging systems, is indispensable for guiding complex diagnostic and interventional procedures, yet it inherently exposes personnel to significant radiation doses. The aim of this paper was to determine the amount of scattered radiation dose for the mobile fluoroscopy c-arm imaging using dose mapping. **Methods:** A Siemens Siremobil Compact L mobile fluoroscopy system was used to scan the CIRS Model 903 Radiography/Fluoroscopy QA Phantom. The Personal Electronic Dosimeter was fixed at five different distances (0.25, 0.5, 1.0, 1.5 and 2.0 m) at eight different angles around the x-ray tube (0°, 45°, 90°, 135°, 180°, 225°, 270° and 315°). The phantom was exposed using the tube voltage 74 kVp and Automatic Exposure Control (AEC) fixing a 20 cm source to image distance (SID), simulating an AP and lateral projection hip imaging procedure. **Results:** The highest scatter radiation dose was at a distance of 0.25m from the x-ray tube for both, AP and lateral projection. Meanwhile, the lowest scattered dose was at an angle of 0°. The scattered radiation dose mapping indicated that the radiation workers will receive a dose of 20 mSv/year at a distance of 0.28 m, students is 6 mSv/year at a distance of 0.6 m while public is 1 mSv/year at a distance of 1.29 m from the x-ray tube. **Conclusions:** The measured scattered radiation doses were within the acceptable annual dose limits according to the Atomic Energy Licensing Act 1984 (Basic Safety Radiation Protection) Regulations 2010, fostering a more informed and proactive radiation safety culture.

Keywords: mobile fluoroscopy, C-arm imaging systems, personal electronic dosimeter, scattered radiation, dose mapping