قال تعالى:

﴿وَعِندَهُ مَفَاتِحُ الغَيّ ثَمَا يَعْلَمُهَا إِلَّاَّ هُوَ وَيَعْلَمُ مَا فِي الْبَرِّ وَالْبَحْرِ وَمَا تَسَقُّطُ مِنْ وَرَقَةٍ إِلَّاَّ يَعْلَمُهَا وَلاَ حَتَّى فِي ظُلُمَاتِ الْأَرْضِ وَلاَ رَطْبٍ وَلاَ يَا أَيُّهَا الْيَتَابِ مُبْيِنٌ﴾

سورة الأنبياء الآية (59)

﴿وَيَسْأَلُونَكَ عَنِ الرُّوحِ قُلِ الرُّوحُ مِنْ أَمْرِ رَبِّي وَمَا أُوتِيتُمْ مِنْ الْ عِلْمٍ إِلَّا قَلِيْلًا﴾

سورة الإسراء الآية (85)
Dedication

Every challenging work needs self-efforts as well as guidance of elders especially those who were very close to our heart.

To those of the fingers to give us a life of happiness.

My humble effort I dedicate to my sweet and lovely mother, who guided me from the first step on and never let me fall...

To the soul of my dear father

To My Dear husband, and My sweet Baby

To my brothers, sisters, friends, and to all my family.
Acknowledgements

I would like to express my deepest and endless gratitude to Dr. Hussein Ahmed Hassan, for his fruitful guidance, professionalism, enthusiasm, valuable guidance, patience, kindness, consistent encouragement, support and guidance that I received throughout the research work. My great thanks extend to the staff of radiology department in Alshab Teaching Hospital thanks also extend to radiology department Ibrahim Malik Teaching Hospital for their great efforts helps in data collection. Finally Deep thanks to my family for their consistent mental support.
Abstract:
This study aims to evaluate of patient radiation dose in chest x-ray using Entrance surface dose calculations, the study was done in two hospitals Alshab Teaching Hospital and Ibrahim Malik Teaching Hospital in Khartoum state, Entrance surface dose (ESD) was determined from exposure settings and patient information using mathematical equation.

220 patients were examined in this study, The entrance surface doses (ESDs) to patient undergoing chest X-ray radiography Exposure settings and patients data were recorded. Result concerning the kilovoltage (KVp) and tube current (mAs) and focus to film distance (FFD) settings. The variation in the patient doses and techniques used for the examinations studied were found among the different hospitals denoting the importance of establishing a national quality assurance programme and examination protocols to ensure patient doses are kept as Low as possible. Mean ESDs obtained for chest radiography in Alshab Teaching Hospital recorded in this study was (0.125 ±0.04) mGy and Mean ESDs obtained for Lumbar spine radiography in Ibrahim Malik Teaching Hospital recorded in this study was (4.39 ±1.23) mGy.
الملخص:

تهدف هذه الدراسة إلى تقييم الجرعة الإشعاعية للمريض في كشف الأشعة السينية للصدر باستخدام حسابات الجرعة عند السطح. وقد أجريت هذه الدراسة في مستشفى الشعبي التعليمي ومستشفى إبراهيم مالك التعليمي في ولاية الخرطوم. تم تحديد الجرعة عند السطح من إعدادات التعرض ومعلومات المريض باستخدام معادلة رياضية.

تم فحص 220 مريض في هذه الدراسة وتم تسجيل إعدادات التعرض ومعلومات المريض والجرعة عند السطح للمريض تحت فحص الأشعة السينية للصدر، النتائج تتضمن معلومات المريض الطول والوزن والجنس والعمر وإعدادات التعرض جهد الأنبوبي وتيرة الأنبوبي والزمن.

تم ملاحظة الاختلاف في الجرعة للمريضى التقنيات المستخدمة للفحوصات المدروسة التي وجدت بين مختلف المستشفيات تشير إلى أهمية تأسيس برنامج تأكيد جودة قومي وبروتوكولات الفحص الإشعاعي للتأكد أن جرعة المريض محفوظة أقل ما يمكن. وجدت الجرعة عند السطح المتحصلة عليها من هذه الدراسة في مستشفى الشعبي التعليمي وفي مستشفى إبراهيم مالك التعليمي (1.23 ± 0.43 ملي قري) (0.04± 1.25).
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<td>CR</td>
<td>Computed Radiography</td>
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<tr>
<td>DR</td>
<td>Digital Radiography</td>
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<td>ATH</td>
<td>Alshab Teaching Hospital</td>
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<tr>
<td>ICRU</td>
<td>International commission radiological unit.</td>
</tr>
<tr>
<td>FS</td>
<td>Film Screen</td>
</tr>
<tr>
<td>AP</td>
<td>Anterior posterior</td>
</tr>
<tr>
<td>PA</td>
<td>Poster anterior</td>
</tr>
<tr>
<td>LAT</td>
<td>Lateral</td>
</tr>
<tr>
<td>HVL</td>
<td>Half Value Layer</td>
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<tr>
<td>PSP</td>
<td>Photo stimulated phosphor</td>
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<tr>
<td>TLD</td>
<td>Thermoluminencecence Detector</td>
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<tr>
<td>PMT</td>
<td>Photomultiplier tube</td>
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<td>ESAK</td>
<td>Entrance Surface Air Kirma</td>
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<td>ESD</td>
<td>Entrance Surface Dose</td>
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<td>Film Skin Dose</td>
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<td>ALARA</td>
<td>As Low As Reasonable Achievable</td>
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<tr>
<td>ICRP</td>
<td>International Commission on Radiological Protection</td>
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<td>NRPB</td>
<td>National Radiation Protection Board</td>
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