بسم الله الرحمن الرحيم

**قال تعالى:**

﴿ وَعَلَّمَ آدَمَ الأَسْمَاء كُلَّهَا ثُمَّ عَرَضَهُمْ عَلَى الْمَلاَئِكَةِ فَقَالَ أَنبِئُونِي بِأَسْمَاء هَؤُلاء إِن كُنتُمْ صَادِقِينَ ﴿ 31 ﴾ قَالُواْ سُبْحَانَكَ لاَ عِلْمَ لَنَا إِلاَّ مَا عَلَّمْتَنَا إِنَّكَ أَنتَ الْعَلِيمُ الْحَكِيمُ ﴿ 32 ﴾

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# *Dedication*

*I dedicate this research to God Almighty my creator, my strong pillar, my source of inspiration, wisdom, knowledge and understanding, He has been the source of my strength through this program.*

*I also dedicate this research work to my supervisor DR. Elias Siddig who never failed to teach and guide me.*

*To my family who supports me in every things, most of all to my father who taught me the best kind of knowledge to have is that which is learned for its own sake. To my mother who taught me that even the largest task can be accomplished if it is done one step at a time.*

*To my friends who helped me to finish this project.*

# *Acknowledgement*

*I wish to express my deep gratitude and sincere thanks to my supervisor DR. Elias Siddig for his invaluable guidance, constant encouragement, constructive comments, sympathetic attitude and immense motivation, which has sustainable my efforts at all stages of this project work. His valuable advice and suggestions for the corrections, modifications and improvement did enhance the perfection in performing my job well.*

*I would like to express my gratitude for our hospitals hearted co-operation and guidance .I am also thankful for their encouragement and for all the facilities that they provided for this project work. I sincerely appreciate this magnanimity by taking me into their fold for which I shall remain indebted to them.*

*I take special pleasure in acknowledging to Sudanese atomic commission for his willingness in providing me with necessary equipment and constant support and without this effort would have been worthless.*

# Abstract:

Ionizing radiation can cause harm and a systematic approach should be applied to ensure that there is a balance between being able to utilize the benefits from medical uses of ionizing radiation and minimizing the risk of radiation effects to patients, workers and members of the public.

This study was conducted in Khartoum state hospitals, centers, and a number of private hospitals which are about 12 hospitals and centers in the period from March 2016 to November 2016. The aim of this study was to survey personal radiation protection for technicians, radiologist, patient and other workers, ensure that there are appropriate protective equipment are provided, and to ensure that the standard of radiation protection program in all aspects were applied. Methods used questionnaire, observations, and measurements.

The study revealed that 55% of the study population is concerned about radiation protection program, and recommendations were developed to improve this percentage.

## المستخلص:

الإشعاع المؤين يمكن أن يسبب الأذى وينبغي تطبيق نهج منتظم لضمان أن يكون هناك توازن بين القدرة على الاستفادة من فوائد الاستخدامات الطبية للإشعاعات المؤينة والتقليل من خطر الآثار الإشعاعية للمرضى والعاملين والعامه.

وقد أجريت هذه الدراسة في مستشفيات ولاية الخرطوم_عدد من المستشفيات الخاصة والحكومية والمراكز الصحية_والتى عددها 12 مستشفى ومركزا صحيا فى الفتره من مارس 2016 الى نوفمبر 2016 . وكان الهدف من هذه الدراسة تقييم مستوى الحماية من الأشعة الشخيصية لفنيي الأشعة ، المريض وغيرهم من العاملين، وضمان أن معدات الوقاية من الأشعة يتم توفيرها، وضمان ان برنامج الحماية من الإشعاع يتم تطبيقه من جميع النواحى. استخدمت طرق الاستبيان والملاحظات والقياسات لتقييم مستوى الحماية.

كشفت الدراسة ان 55% فقط من عينة الدراسة تقوم بتطبيق برنامج الحماية من الإشعاع، ووضعت توصيات لتحسين هذه النسبة .

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## Abbreviations:

| | |
|---|---|
| CT | Computed tomography |
| UK | United Kingdom |
| US | United State |
| FDA | Food and Drug Administration |
| ICRP | International Commission on Radiological Protection |
| IAEA | International Atomic Energy Agency |
| ICRU | International Commission on Radiation Units and Measurements |
| ALARA | As Low As Reasonably Achievable |
| RSO | Radiation Safety Organization |
| RSD | Radiation Safety Division |
| PIs | Practical Investigation |
| ED | Emergency Department |
| TLDs | Thermal luminescent Detectors |
| SAEC | Sudanese Atomic Energy Commission |
| PPE | Personal Protective Equipment |