

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ
اللَّهُ لَا إِلَهَ إِلَّا هُوَ الْحَيُّ الْقَيُّومُ لَا تَأْخُذُهُ
سِنَةٌ وَلَا نَوْمٌ لَهُ مَا فِي السَّمَوَاتِ وَمَا فِي
الْأَرْضِ مَنْ ذَا الَّذِي يَشْفَعُ عِنْدَهُ
إِلَّا بِإِذْنِهِ يَعْلَمُ مَا بَيْنَ أَيْدِيهِمْ وَمَا خَلْفَهُمْ
وَلَا يُحِيطُونَ بِشَيْءٍ مِنْ عِلْمِهِ إِلَّا بِمَا شَاءَ
وَسِعَ كُرْسِيُّهُ السَّمَوَاتِ وَالْأَرْضَ
وَلَا يَئُودُهُ حِفْظُهُمَا وَهُوَ الْعَلِيُّ الْعَظِيمُ

آية الكرسي سورة البقرة 255

Dedication

To.....

My family

My teachers

My friends

My colleagues

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Abstract

Dental radiography is one of the most valuable tools used in modern dental health care. Dental radiography contributes for nearly 25% of the total number of radiological examinations in European Union. Therefore, dental radiography must be used carefully for patients radiation protection.

The aim of This study intended to measure the radiation dose in dental radiography (intraoral (periapical and occlusal) and extral oral(Ortho pantomogram(OPG)). Random samples consist of 55 patients who underwent dental radiography examination. The patients were registered (age, gender, type of examination, clinical examination, exposure factor (mA, kV, sec)). Out of this sample, 20 patients were females while the 37 were males and their ages ranged from 4 to 62 years old. The study was done in Khartoum teaching dental hospital-Khartoum, Sudan.Data were collected in the period from November 2011 to January 2012.

The mean ESD in piratical was 0.94 ± 0.3 and the range was 0.05 to 1.4 mGy per procedure. The mean ESD and the range during occlusal film imaging was 2.19 ± 0.3 (1.7-2.3) mGy while the mean ESD and the range in OPG was 233.5 ± 22.23 (192.3-262).

The study shows that there is a large dose variation between different X-ray units used for the same radiographic projection. When performing radiological examinations different exposure

factors for different patients must be used. The radiation doses for this study were lower than the most previous studies.

ملخص البحث

فحوصات التصوير الاشعاعي للأسنان هي من أكثر الأدوات المستخدمة قيمة في مراكز الرعاية الصحية الحديثة. التصوير الاشعاعي للأسنان يشكل ما يقرب 25 % من إجمالي عدد الفحوصات الإشعاعية في الاتحاد الأوروبي وذلك، يجب استخدام التصوير الاشعاعي للأسنان بعناية لحماية المرضى من الإشعاع.

هذه الدراسة تهدف لقياس الجرعة الإشعاعية في التصوير الاشعاعي للفم (داخل الفم البشري، إبيكل و الأكلوزل) و الفحوصات (خارج الفم مثل البانوراما) تم اخذ عينات عشوائية تتكون من 57 مريضاً خضعوا لفحوصات الأسنان بالأشعة. تم تسجيل المرضى كالاتي (العمر، الجنس، نوع الفحص، الفحص السريري، عوامل التعرض (الكليوفولت، الملي لمبير زمن التعرض)) حيث وزع عدد المرضى 20 مريضاً من الإناث و 37 من الذكور، أما أعمار المرضى تراوحت بين 4 الى 62 سنة و قد تم الدراسة و اخذ المعلومات و البيانات من مستشفى الأسنان التعليمي-الخرطوم-السودان حيث أجريت الدراسة من الفترة الزمنية الآتية من نوفمبر 2011 الى يناير 2012. وقد أوجت الدراسة بانه المتوسط للجرعة البشري إبيكل 0.3 ± 0.94 و كان المدى (0.05-1.4) ملل جري، أما الوسط الجرعة لفحص الأكلوزل 0.3 ± 2.19 المدى (1.7-2.3) ملل جري وكانت الجرعة في فحص . (البانوراما 22.23 ± 233.5 المدى (192.3-262.7)

حيث أظهرت الدراسة اختلاف كبير في كمية الجرعة الإشعاعية مع اختلاف نوع الفحص وعند إجراء الفحص يجب أن تختلف عوامل التعرض على حسب المريض حيث أن الجرعة الإشعاعية لهذه الدراسة أقل من معظم الدراسات السابقة التي أجريت

Abbreviation

IRCP: international radiation commission on protection

NRPB: national radiological protection board

P.A: Periapical

OCC: Occlusal

OPG: Orthopantogram

ESD: Entrance surface dose

DWP: Dose width product

DAP: Dose area product

Pt: patient

mA: mail ampere

KV: kilo volte

OP: Out put

BSF: Backscatter factor

FSD: Focus-to-skin distance

PID: position indicating device

ALARA: As Low As Reasonably Achievable

TMJ: Temporomandibular Joints

DRL: Diagnostic reference level

TLD: Thermoluminescent dosimetry

PID:Position indicating device

RAD: Radiation absorbed dose

SV: Sievert

Gy: Gray

Bq: Becquerel