



Sudan University of Science & Technology
College of Graduate Study
Diagnostic Department



Evaluation of Bone Mineral Content by using Dual Energy X-ray Absorptiometry

**تقويم كثافة معادن العظام باستخدام جهاز قياس الامتصاص الاشعاعي
مزدوج القوة**

**A Thesis Submitted in Partial Fulfillment for the Requirements of
Master Degree of Science in Diagnostic Radiological Technology**

Presented by :

Lubna Abd Rahman Abd Wahab Elmagzoub

Supervised by:

Dr Husien Ahmed Hassan

Dedication

TO MY PARENTS

TO MY BROTHERS

TO MY TEACHERS

TO MY COLLEAGUES

TO ALL MY FRIENDS

A cknowledgment

Through his holy direction and his holy will we have accomplished this project

We are grateful for the help receive from our supervisor ustaz.musab murgani to whom we always remain indebted

We want to thanks my friends who give us his precious time and for his help and support during this research.

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Abstract:

Dual-energy X-ray Absorptiometry (DXA) is recognized as the reference method to measure bone mineral density (BMD) with acceptable accuracy errors and good precision and reproducibility.

The World Health Organization (WHO) has established DXA as the best densitometric technique for assessing BMD and based the definitions of (osteopenia and osteoporosis) on its results.

DXA allows accurate diagnosis of osteoporosis, estimation of fracture risk and monitoring of patients undergoing treatment. 50 adults population, 29 female, 21 male with age ranged from 20-90 years no underline disease, children and pregnant women were excluded. Information obtained from examination by Dual Energy X-ray Absorptiometry (DEXA).

Data collected from sampling AP projection of Lumber spines to measure and evaluate Bone Mineral Density to make differential diagnosis in Bone Mineral Density loss (normal, Osteopenia and osteoporosis) to evaluate the finding according to the T-score value.

Osteopenia are 23 patient representing 46%of total .52% female and 48%male.

-osteoporosis are 9 patients representing18%of total.89%female and 11%male.

-Normal Sudanese are18 representing 36%of total.50%femal,50%male.

ملخص البحث

جهاز قياس كثافة العظام عبارة عن جهاز يقوم بقياس كثافة العظام بأقل نسبة خطأ ممكنة و تعتبر منظمة الصحة العالمية انه أنسب طريقة للكشف عن أمراض هشاشة و ليونة العظام و في هذا البحث سوف نتحدث عن جهاز قياس كثافة العظام و عن كيفية قياس و معرفة أمراض العظام الناجمة عن نقصان كثافة العظام

تم أخذ عينة بحجم 50 شخص من البالغين، 29 من الإناث و 21 من الذكور تراوحت أعمارهم من 20-90 سنة ، تم استبعاد الأطفال والنساء الحوامل. وكانت النتيجة على النحو التالي:

-23 مريض ما يمثل 46% من إجمالي العينة كانوا عرضة للهشاشة - الإناث 52% و 48% من الذكور.

- 9 مرضى ما يمثل 18% من إجمالي العينة كانوا مضابين بالهشاشة 89% إناث و 11% ذكور.

- 18 من إجمالي العينة كانوا صحيين 50% منهم اناث و 50% من الذكور.