



شبكة المعلومات الجامعية  
التوثيق الإلكتروني والميكرو فيلم

# بسم الله الرحمن الرحيم



**HANAA ALY**



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# شبكة المعلومات الجامعية التوثيق الإلكتروني والميكروفيلم



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# جامعة عين شمس

## التوثيق الإلكتروني والميكروفيلم

### قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها  
علي هذه الأقراص المدمجة قد أعدت دون أية تغييرات



### يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار



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# **Evaluation of Bone Mineral Density and Body Composition in 13 - 14 Years Old Egyptian Females**

**Thesis**

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

# قَالَ

سَبَّحَانَكَ لَا إِلَهَ إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ  
الْعَلِيمُ الْعَظِيمُ

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## *List of Abbreviations*

Abb.	Full term
25OHD .....	25 hydroxyvitamin D
BMC.....	Bones mineral content
BMD .....	Bone mineral density
BMI.....	Body mass index
BMPs .....	Bone morphogenetic proteins
CT .....	Computed tomography
DXA .....	Dual–energy x-ray absorptiometry
DXR .....	Digital X-ray radiogrammetry
FGF.....	Fibroblast growth factor
GDFs.....	Growth differentiation factors
GH .....	Growth hormone
IGF-2 .....	Insulin-like growth factor 2
LST .....	Lean soft tissue
PDGF.....	Platelet-derived growth factor
PTH .....	Parathyroid hormone
PTHrP .....	Parathyroid hormone-related protein
Qct .....	Quantitative computed tomography
TGF-β.....	Transforming growth factor beta



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## INTRODUCTION

There are 2 main reasons for measuring bones mineral content (BMC) in children: to quantify the deficits in bone minerals associated with the various disorders that cause osteopenia in children and to improve our understanding of the childhood antecedents of osteoporosis, a condition that happens to manifest itself in elderly subjects.

Available data suggest that the genetic susceptibility to osteoporosis may be detectable in early childhood (*Gilsanz and Wren, 2007*).

Measurement of bone mineral density (BMD) by dual-energy x-ray absorptiometry (DXA) is viewed widely as the method for clinical use in children because of its speed, precision, safety and widespread availability (*Binkovitz and Henwood, 2007*).

The radiation exposure is comparable to that received during a round trip transcontinental airplane flight (*Bachrach, 2005*).

Body composition: it is the body fat mass and lean mass (*Fahey et al., 2010*).

DXA can detect body mass by giving two different types of x-ray to do scanning to the body, one detects all tissues fat

and another that doesn't detect fat. Computers can subtract the second picture from the first one, giving only fat detection. The mass of this can be estimated (*Fahey et al., 2010*).



## **AIM OF THE WORK**

**T**he aim of this work is to set a standardized pediatric normative database for bone mineral density and body composition in a representative sample of healthy Egyptian females children aged 13-14 years old by dual energy x-ray absorptiometry scanning (DXA) as a part of large study