The Republic of Iraq

**Ministry of Higher Education and Scientific Research** 

**Al-Furat Al-Awsat Technical University** 

**Medical Technical Institute** 

Department of industrial limbs and support



#### (Effect of life style factors on density of bone in woma)

### By supervisor:-

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# (قَالُوا سُبْحَانَكَ لَا عِلْمَ لَنَا إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ الْعَلِيمُ الْحَكِيم)

صدق الله العلي العظوم سورة البغرة اية(٣٢)

# Abstract

Bone density is the amount of bone tissue in a certain volume of bone About 200 million people are estimated to have osteoporosis throughout the world[1]. The Objectives, Promote societal awareness of bone density and an understanding of the great losses that disease can cause to an individual's future if left without diagnosis and treatment Learn about the relationship between bone density and fractures, which can be a cause of disability and death in the elderly Understand therelationship between medications and prescription drugs that the patient takes and bone density disease.

Study Design descriptive and Analytic study was conducted in DEXA unit in Radiology department, physiotherapy unit at Alsader Technig Hospital in Al\_Najaf province. From Augest 2020 to March 2021, Through our study of this subject, we found that the percentage of bone density for women is 23.914.

Methodolog

A \_ Through direct interview to the woman. B\_ case sheet.

The tools questionnaire was collected through questions consisting of 7 parts:

Part one : Demographical variables ,such as,(age ,educational level )

Part two: General information about the disease for patient, such as,( family history ,personal history ,past surgical history)

Part three: Disease and drugs for patient, such as(,high bloob, Compounel fracture, Thyroid)

Part four: Reproductives Characteristic ,such as ,(age of marriage ,The number of pregnanciesnumber of children a live)

Part five:Information about diet such as,(Red meat, Alcoholic, drinks)

Part six: investigation and test about patient such as the rate( vitamin a,vitamin d,vitamin c, phosphorous, magnesium, calcium)in the body.

Part seven: physical activity ,such as,( cooking ,house cleaning ,Washing,dish).

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Statistical analysis includes,

A\_ descriptive analysis including, Frequency and ratios.

B\_ inferential analysis Which was obtained by the Chi Square test.

Results Table1:show at most of women (32.8%)reported within age group( $40_49$ )years. (68.6%) og women lived in urban areas and (40%) of women level of education illiterate and (75.7%) of the women reported not smokers and (90%)of the women repeated housewife. And (48.6%) of the women repeated monthly incom enough for exent. (24.29%) of women repeated within weight group (55\_65)kg. And (44.29%) of the women within height group(161\_170)cm.Table 2 shows that the average number of pregnancies 6 to 8 is( 41.43%), and most of the births were natural at( 80%), and the number of live babies for most women from 3 and above reached (72.86%), and (90%) of the women were healthy from infertility.knowing that the peaceful women of Infertility She did not take medical medicines related to infertility, as the percentage of not taking medicines was(95.71%), and most women were married on average (16 to 20 years old), where the rate reached (54.29%). In addition, it was found that the uterine cycle for most women was irregular, as the percentage of irregularity reached In women( 57.2%)Table3,the family medical history,(45%) did not suffer from high blood pressure and (59%) reported that they did not have chronic diabetes. It was also found that(89%) of women did not suffer from cancer and (66%) did not have a fracture. Table 4, the previous personal history of women (76%) of the women who reported the absence of high blood pressure and

(78.6( of the women reported that they do not have diabetes and that (51.4%) had gastroenteritis and it appears (87%) Of the women, they did not have nervous disorders, and it was found that (82.85%) had a normal thyroid gland.The Conclusion recommendation accordiy to resuet it is recommended to made educational proguaun foret about risk factors associated with bone density.

# Introduction

Bone density: is the amount of bone tissue in a certain volume of bone About 200 million people are estimated to have osteoporosis throughout the world. In the U.S., the figure is about 54 million people Although osteoporosis occurs in both men and women, women are four Times more likely to develop the disease than men. There are currently About two million men in the U.S. who have osteoporosis and some 12 Million more who are at risk of developing the condition and in lraq.[1]

The prevalence of osteoporosis and osteopenia in premenopausal was (26.7%) and (3.3%) and in postmenopausal subjects was (34.17%) and

(52.5%) respectively.[2]

Lifestyle (or what is sometimes known as lifestyle) is the environment that a person chooses to live in and how he deals with it, each according to his ability, position in society and his personal convictions. The lifestyle differs from one individual to another. Whoever wants to maintain his health chooses a lifestyle in a healthy environment that is suitable, far from smoking, close to the facilities and places of nursing, and usually lives in a quiet area far from the noise and chooses an appropriate diet program. There is also the head of the family who cares about raising his children, preparing them for a lifestyle in which they can grow properly, choosing the appropriate and safe environment for them. Examples of lifestyle are many, including the positive and the negative [3]. The of disease Bones naturally become thinner as people grow older because, beginning in middle age, existing bone cells are reabsorbed by the body faster than new bone is made. As this occurs, the bones lose minerals, heaviness (mass), and structure, making them weaker and increasing their risk of breaking. All people begin losing bone mass after they reach peak bone density at about 30 years of age. The thicker your bones are at about age 30, the longer it takes to develop low bone density or osteoporosis. Some people who have low bone density may not have bone loss<sup>[4]</sup>. They may just naturally have a lower bone density. Low bone density may also be the result of one or more other conditions, disease processes, or treatments. Women are far more likely to develop low bone density and osteoporosis than men. This is because women have a lower peak bone density and because the loss of bone mass speeds up as hormonal changes take place at the time of menopause. In both men and women, the following things can contribute to low bone density.[5]

Eating disorders or metabolism problems that do not allow the body to take in and use enough vitamins and minerals Chemotherapy, or medicines such as steroids used to treat a number of conditions, including asthma

Exposure to radiation Having a family history of osteoporosis, being thin, being white or Asian, getting limited physical activity, smoking, and drinking excessive amounts of alcohol also increase the risk for low bone density and, eventually, osteoporosis.[6]

Low bone density is diagnosed with a bone density test, usually done to see whether you have osteoporosis. The most accurate test of bone density is dual-energy X-ray absorptiometry (DXA), although there are other methods. DXA is a form of X-ray that can detect as little as 2% of bone loss per year. A standard X-ray is not useful in diagnosing low bone density, because it is not sensitive enough to detect small amounts of bone loss or minor changes in bone density.[7] Low bone density is treated by taking steps to keep it from progressing to osteoporosis and, for a few people, by taking medicine. Lifestyle changes can help reduce the bone loss that leads to low bone density and osteoporosis.[8]

# Methodolog

A\_**Study Design**: Descriptive and Analytic study was conducted in DEXA unit in Radiology department, physiotherapy unit at Alsader Technig Hospital in Al\_Najaf province. From Augest 2020 to March 2021

B\_Sample of study : non probability purposive sample (70) Women.

C-Criteitia

#### 1)**included**

-women diagnosis bone density .

-patient who cooperative.

#### 2)excluded

-patient not cooperative.

.-patient less than 20

## method &tools of study

- -1-Direct interview with the patient
- -2- case sheet of patient included:
- -blood sample
- -hormone test

#### -dexa-scan

## D- Tools

The used questionnaire was collected through questions consisting of 7 parts:

1\_Part one : Demographical variables ,such as,(age ,educational level ,occupation)

2\_Part two: General information about the disease for patient, such as,( family history, personal history, past surgical history)

3\_part three: Disease and drugs for patient , such as (high bloob, strok · Multaple scleros, Compounel fracture ·Thyroid)

4\_part four: Reproductives Characteristic ,such as ,(age of marriage ,The number of pregnanciesnumber of children a live)

5\_Part five:Information about diet such as,(Red meat, Alcoholic, drinks, Fish, Fruits)

6\_Part six: investigation and test about patient such as the rate( vitamin a,vitamin d,vitamin c, phosphorous, magnesium, calcium)in the body.

7-Part seven: physical activity ,such as,( cooking ,house cleaning ,Washing,dish, Shopping)

#### **E\_**Statistical analysis includes,

1\_descriptive analysis including, Frequency and ratios

2\_inferential analysis Which was obtained by the Chi Square test

# **F\_Limitation**

We faced many obstacles, and one of the most important of these was the refusal of some women to answer the questions because of fearfrominfected of the Covid \_19 virus.

### Results

Demographic Variables	Rating	Frequency =70	% Ratio
	>30 years old	10	14.2
Ave / vears	30 – 39	14	20
	40 – 49	23	32.8
	50 - 59	8	11.4
	60 and above	15	21.4
	Illiterate	28	40
Education	Primary school	34.3	
EUUCALION	Secondary	12	17
	Institute and above	6	8.5
Occupation	Government Employed	7	10
Occupation	Housewife	63	90
Posidonts	Urban	48	68.6
Residents	Rural	22	31.4
	Enough	21	30
Monthly income	Enough for extent	34	48.6
	Not enough	15	21.4
Smaka	Active	17	24.3
Smoke	Passive	53	75.7
	45 -55 kg	17	24.29
Weight/Kg	56-65	17	24.29
	66- 75	11	15.71
	76- 85	12	17.14
	86 >	13	18.57
	140-150	18	25.71
Height/Cm	151-160	21	30
	161-170	31	44.29

Table 1: Characteristic of study sample according to demographic date.

Table1:The most of women (32.8%)reported within age group(40\_49)years. (68.6%) og women lived in urban areas and (40%) of women level of education illiterate and (75.7%) of the women reported not smokers and (90%) of the women repeated housewife. And (48.6%) of the women repeated monthly incom enough for exent. (24.29%)of women repeated within weight group (55\_65)kg. And (44.29%)of the women within height group(161\_170)cm.

Reproductive	Rating	Frequency=70	% Ratio
	2 and less	10	14.29
Number of pregnancies	3 – 5	18	25.71
	6 – 8	29	41.43
	9 and more	13	18.57
Mathad daliyany	Normal delivery	56	80
Wiethod delivery	Caesarean births	14	20
	1	4	5.71
Number children a live	2	5	7.14
	3 and more	51	72.86
Doos she have fortility	Yes	7	10
Does she have fertility	No	63	90
	Yes	3	4.29
Have you taken medicines for intertility	No	67	95.71
	>15	22	31.43
Age at marriage	16-20	38	54.29
	21-25	7	10.00
	26-30	2	2.86
Monstrual cyclo	Regular 30		42.8
	Irregular	40	57.2

Table 2: Characteristic of study sample according to Reproductive Variables

Table 2 shows that the average number of pregnancies 6 to 8 is(41.43%), and most of the births were natural at(80%), and the number of live babies for most women from 3 and above reached(72.86%), and(90%) of the women were healthy from infertility, knowing that the peaceful women of Infertility She did not take medical medicines related to infertility, as the percentage of not taking medicines was(95.71%), and most women were married on average (16 to 20 years old), where the rate reached (54.29%). In addition, it was found that the uterine cycle for most women was irregular, as the percentage of irregularity reached In women(57.2%).

Table 3: Characteristic of study sample according to medical family history

(Family) Disease Variables	Rating	Frequency=70	% Ratio
Lligh blod processo	Pasive	39	55
High bliod pressure	Negative	31	45
Diabetes mellitus	Pasive	29	41
	Negative	41	59
Concor	Pasive	8	11
Cancer	Negative	62	89
Fructure bones	Pathologe	17	34
Fructure bones	Non pathology	53	66

Table3: the family medical history,(45%) did not suffer from high blood pressure and (59%) reported that they did not have chronic diabetes. It was also found that( 89%) of women did not suffer from cancer and (66%) did not have a fracture.

Table 4:Characteristic of study sample according to Personal past history for women

(Personal) Disease Variables	Rating	Frequency=70	% Ratio
High blod prossure	Pasive	17	24
High bliod pressure	Negative	53	76
Diabatas mollitus	Pasive	15	21.4
Diabetes menitus	Negative	55	78.6
	celiac disease	8	11.4
Digestive disorders	inflammatory bowel disease	26	37
	The are no disorders	36	51.4
	Strok	5	7.14
	multaple sclerosis	2	2.8
Neurological disorders	parkinsou is disease	2	2.8
	There are no disturbances	61	87
	Normal	58	82.85
Thyroid	Active	7	10
	Idle	5	7
	Тохіс	0	0

Table 4:the previous personal history of women (76%) of the women who reported the absence of high blood pressure and (78.6 )of the women reported that they do not have diabetes and that (51.4%) had gastroenteritis and it appears (87%) Of the women, they did not have nervous disorders, and it was found that (82.85%) had a normal thyroid gland.

Variables bone mineral density									
		nor	mal	osteopenia		osteo	porosis	X	valus
		no.	%	no.	%	no.	%		
Aye / years	>30 years old	10	14.2	15.9	22.7	30.2	43.14	23.914 <sup>a</sup> <0.001 hs	<0.001 hs
	30 - 39	14	20	25.4	36.2	5	7.142		
	40 - 49	23	32.8	23.8	34	20	28.57		
	50 - 59	8	11.4	23.8	34	9	12.85		
	60 and older	15	21.4	15.9	22.7	10	14.28		
Education	Illiterate	28	40	15.9	22.7	15.9	22.71	18.000 <sup>b</sup>	<0.001
	Primary school	24	34.3	30.2	43.1	25.4	36.28		hs
	Secondary	12	17	5	7.14	23.8	34		
	Institute	6	8.5	20	28.5	23.8	34		
Occupation	Government Employed	7	10	9	12.8	15.9	22.71	9.657 <sup>c</sup>	<0.05 s
	Housewife	63	90	10	14.2	15.9	22.71		
Residents	Urban	48	68.6	15.9	22.7	15.9	22.71		
	Rural	22	31.4	25.4	36.2	15.9	22.71	17.429 <sup>d</sup>	<0.05
Monthly	Enough	21	30	23.8	34	30.2	43.14		S
income	Enough for extent	34	48.6	23.8	34	9.5	13.57	23.971 <sup>e</sup>	<0.001 hs
	Not enough	15	21.4	15.9	22.7	5	7.142		
Smoke	Active	17	24.3	15.9	22.7	20	28.57		
	Passive	53	75.7	30.2	43.	9	12.85	44.800 <sup>c</sup>	<0.001
Weight/Kg	45 -55	17	24.29	9.5	13.5	10	14.28		hs
	56-65	17	24.29	15.9	22.7	15.9	22.714 29	8.086 <sup>f</sup>	<0.001 hs
	66- 75	11	15.71	25.4	36.2	25.4	36.28		<0.05
	76-85	12	17.14	23.8	34	23.8	34		S
	86 >	13	18.57	23.8	34	23.8	34		

# Table 5: The relationship between bone density and demographic

Height/Cm	140-150	18	25.71	5	7.14	41	58.57		
	151-160	21	30	20	28.5	59	84.28	28.400 <sup>g</sup>	
	161-170	31	44.29	9	12.8	11	15.71		<0.05
	Irregular	40	57.2	25.71	36.7	23.8	34		S

# Table 6:The relationship between bone density and reproductive.

Var	variables bone mineral density								
		nor	mal	osteop	penia	osteo	porosis	х	valus
		no.	%	no.	%	no.	%		
Number of	2 and less	10	14.29	23.8	34	5	7.142	<b>18.000</b> <sup>b</sup>	
pregnancie	3 – 5	18	25.71	23.8	34	13	18.57		<0.05
S	6 – 8	29	41.43	15.9	22.7	5	7.142		S
	9 and more	13	18.57	15.9	22.7	20	28.57	9.657 <sup>c</sup>	
Type of labors	Normal delivery	56	80	30.2	43.1	9	12.85		<0.05 s
	Caesarean births	14	20	9.5	13.5	5	7.142	17.429 <sup>d</sup>	<0.05 s
Number	1	4	5.71	25.4	36.2	20	28.57		
children a	2	5	7.14	78.6	11.2	9	12.85		
live	3 and more	51	72.86	11.4	16.2	10	14.28		
Does she	Yes	7	10	37	52.8	15.9	22.71	23.914 <sup>a</sup>	<0.001
have fertility	No	63	90	51.4	73.4	25.4	36.28		hs
Have you	Yes	3	4.29	2.8	4	23.8	34	18.000 <sup>b</sup>	
taken medicines for infertility	No	67	95.71	87	124.	23.8	34		
Age at	>15	22	31.43	82.85	11.8	15.9	22.71	9.657 <sup>c</sup>	
marriage	16-20	38	54.29	10	14.2	17	24.28		<0.001
	21-25	7	10	7	10	20	28.57		hs
	26-30	2	2.86	0	0	25.4	36.28		
Menstrual cycle	Regular	30	42.8	14.29	20.4	23.8	34	23.914 <sup>a</sup>	<0.001 hs

#### Discussion

The results of the research on bone density conducted in the State of Iraq in the province of "Al-Najaf" and specifically in Al-Sadr Hospital in the DEXA unit of the Radiology Department, and the Physiotherapy Unit, showed that there is a significant relationship between age and bone density, with age the percentage of bone density decreases because the skeleton He loses mass, and this loss occurs in the mid-twenties, and the loss increases over the age of forty, especially after menopause, where the bones become fragile, which exposes them to fracture easily. This finding matches closely with other research. It also showed that the majority of women who have a bone density of (68.6%) of urban areas, while the rest (31.4%) of rural areas. The current study showed that most women with an increase in bone density by (40%) are illiterate, in contrast (34.3%) of them have a primary certificate, (17%) of them have a secondary certificate, and(8.5%) of them have an institute certificate or higher. It also showed that (90%) of women. They are housewives and in return (10%) are workers. This result may be due to the part that does not know that illiterate women and housewives have bone density due to a sedentary lifestyle, good nutrition and regular exercise, thus being more active and effective. The results of this study also indicated that there is a significant relationship between smoking and bone density. Most of the women who have a bone density of (75.7%) are non-smokers, and in contrast (24.3%)of them are smokers. This is consistent with the results of some other studies in which smoking was considered an important factor. The current study shows a significant difference between menopause and bone density. Where it was found that married women within the age group (16-20) have a bone density ratio of (57.29%), due to the important role of estrogen in maintaining bone density, as menopause is an important indicator of osteoporosis associated with it because it leads to weak bones. The results of this study are comparable with those of other reported

studies, where the increased rate of bone resorption immediately after menopause suggests a hormonal effect on bone density in women and the most likely explanation for this increased absorption is decreased estrogen production in the ovaries. It was also shown, according to the women's previous personal history, (76%) of the women who reported that they did not have high blood pressure, and in contrast (24%) of them reported that they had high blood pressure, and this result shows a significant correlation between high blood pressure and bone density. The blood calcium metabolism disorder, which affects the increased excretion of calcium through the urine. This excessive elimination of calcium may lead to a loss of bone density (osteoporosis), which in turn can lead to broken bones. And it reported that (78.6%) of women do not have diabetes, women with diabetes are more likely to have low bone density (osteoporosis) because they often suffer from a lack of calcium necessary for healthy and building bones, as well as from vitamin D necessary for deposition. Calcium on the bones, which leads to their weakness. And (51.4%) of women reported that they do not suffer from digestive disorders, as well as (87%) of women do not have nervous disorders. Also, (82.85%) of women reported the absence of hyperthyroidism, and women who suffer from hyperthyroidism are more likely to suffer from low bone density (osteoporosis) due to thyroid problems. Too much thyroid hormone can cause bone loss. This can happen if the thyroid gland is overactive, or if they take too much thyroid hormone medication to treat hypothyroidism.

#### **Conclusion:**

1.The most of women (32.8%)reported within age group(40\_49)years. (68.6%) og women lived in urban areas and (40%) of women level of education illiterate and (75.7%) of the women reported not smokers and (90%) of the women repeated housewife. And (48.6%) of the women repeated monthly incom enough for exent. (24.29%)of women repeated within weight group (55\_65)kg. And (44.29%)of the women within height group(161\_170)cm.

2.The the average number of pregnancies 6 to 8 is( 41.43%), and most of the births were natural at( 80%), and the number of live babies for most women from 3 and above reached( 72.86%), and( 90%) of the women were healthy from infertility.knowing that the peaceful women of Infertility She did not take medical medicines related to infertility, as the percentage of not taking medicines was( 95.71%), and most women were married on average (16 to 20 years old), where the rate reached (54.29%). In addition, it was found that the uterine cycle for most women was irregular, as the percentage of irregularity reached In women( 57.2%).

3.The family medical history,(45%) did not suffer from high blood pressure and (59%) reported that they did not have chronic diabetes. It was also found that( 89%) of women did not suffer from cancer and (66%) did not have a fracture.

4.The previous personal history of women (76%) of the women who reported the absence of high blood pressure and (78.6( of the women reported that they do not have diabetes and that (51.4%) had gastroenteritis and it appears (87%) Of the women, they did not have nervous disorders, and it was found that (82.85%) had a normal thyroid gland.The Conclusion recommendation accordiy to resuet it is recommended to made educational proguaun foret about risk factors associated with bone density.

## **RECOMMENDATION:**

1\_ providing bone density screening devices in most hospitals in Najaf Governorate. 2\_ Bone mineral density measurement for postmenopausal women for early detection of osteoporosis.

3\_ Provide the DEXA unit with published materials to enhance women's knowledge and practice about osteoporosis.

4\_ Used different mass media to educate about bone density(

osteoarthritis) to raise public awareness.

#### References

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4\_<u>Current as of:</u> December 7, 2020 <u>Author:</u> Healthwise Staff <u>Medical Review:</u>Kathleen Romito MD - Family Medicine & Martin J. Gabica MD - Family Medicine & Carla J. Herman MD, MPH - Geriatric Medicine & Heather Quinn MD - Family Medicine [4,5,6,7,8].