

Osteoporosis In Women

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ABSTRACT

Objective To find out the frequency of osteopenia and osteoporosis and to evaluate their etiological factors in women.

Study design Cross sectional study.

Place & Duration of study Department of Obstetrics & Gynecology Fatima Hospital Baqai Medical University, in October 2014.

Methodology Females visiting the outpatient department were randomly selected. These were offered bone mineral density (BMD) test and calcaneal ultrasound. Variables assessed were marital status, parity, lactation status, dietary habits, covering body / using hijab (veil), profession etc. Data was entered and analyzed using SPSS version 15. Chi square test and Fisher Exact test were applied. Results were considered significant if p value was < 0.05.

Results One hundred and thirty two women were evaluated in the study. Mean age of woman was 34.27 + 9.04 year. Osteopenia was detected in 71 (53.8%) women while 20 (15.2%) were in the category of osteoporosis. Significant association was found between anemia and bone density while no significant association was found between working status of women and bone density. Lactation and veil also played important role in BMD scores.

Conclusions Osteopenia was common in pre-menopausal period. The frequency of osteoporosis was found to be less than osteopenia.

Key words Osteoporosis, Osteopenia, Bone mineral density.

INTRODUCTION:

Osteoporosis is a skeletal disorder characterized by reduction in the amount of bone per unit volume and micro architectural deterioration of bone tissue, increasing bone fragility and increasing fracture risk.^{1,2} Osteoporosis is a significant health problem particularly in women.^{3,4} Across the globe, an osteoporotic fracture, is estimated to occur every three seconds.⁵ About 30-50% of women suffer from osteoporosis-related fractures in their lifetime. Fractures are associated with increased morbidity and mortality, and pose a considerable financial burden.

In Pakistan life expectancy at birth has increased

which from 41 year in 1950 to 61.9 year in 1998, and is expected to be 72.4 year in 2023. The proportion of elderly and post-menopausal women is on the rise. In future, more Pakistani women will suffer from osteoporosis-related fractures that will compromise quality of life. Pakistan ranks 5th in the world based upon number of people suffering from osteoporosis.⁷ According to a survey in Pakistan 72% of people lead a sedentary lifestyle and vitamin D deficiency among Pakistani women has been reported to be as high as 83%.⁸ Moreover, the Pakistani diet has been found to be deficient in calcium.⁹ International Osteoporosis Foundation conducted a survey in Pakistani population in 2009 in which overall prevalence of osteoporosis was found to be 16% while that of osteopenia 34%.¹⁰

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Several techniques to measure BMD have been introduced in the last two decades. Although dual energy x-ray absorptiometry (DXA) is considered the gold standard for the assessment of BMD, the last decade has seen the advent of quantitative

ultrasonography (QUS) for the indirect assessment of bone quality. It is especially suited to developing countries for screening purposes; and since there is no ionizing exposure, the devices are portable and the cost is considerably lower. The combination of ultrasonography with risk factor inquiry can identify 90% of women with osteoporosis.

The aim of this study was to find out the frequency of osteopenia and osteoporosis in women visiting hospitals and to assess their associated risk factors.

METHODOLOGY:

This research study was carried out in the outpatient department of the Obstetrics and Gynecology Fatima Hospital Baqai University Karachi in October 2014. The information was collected from all those females belonging to any age group who visited outpatient department. The respondents were properly informed regarding the nature and purpose of the study. Before providing questionnaire they were ensured that the information provided by them would remain confidential. Questionnaires gathered information about parity, duration between pregnancy, lactation status, sun exposure, observing hijab / covering body, dairy intake, socioeconomic status, occupation, smoking, BMI etc.

Complete blood count was done to assess hemoglobin level. Bone Mass Density score was calculated through quantitative ultrasonography. For analysis of data findings, SPSS software was used, which provided results in statistical and numerical format. Chi square and Fisher Exact tests were used to find out significance of the observations where applicable and p value < 0.05 was considered significant.

RESULTS:

Age group of the study participants was from 15 year to 65 year, with the mean age of 34.27 + 9.04 year. All three unmarried women had signs of osteopenia and their age was from 15 year to 20 year. Of the total 83.3% women were housewives. The mean weight and height of respondents were

159.06 cm. and 56 kg respectively (table I).

Among 132 women, osteopenia was detected in 71 females (53.8%), while 20 (15.2%) were in the category of osteoporosis. Ten variables were selected to find out their effect on the bone health of the women. Most of the variables showed strong association with osteopenia and osteoporosis. The mean t-score was -.65, indicating that most of the women included in the study were osteopenic. Strong association of osteopenia / osteoporosis was shown with anemia (p=000). Lactation status and veil also played important role in BMD scores (table II). On the other hand results failed to show the significant association of women’s profession on the BMD.

Table II: Risk Factors for Osteopenia and Osteoporosis (p< 0.05 = significant)	
Chi square test	
Variables	p value
Economic Status	0.008
Sun Exposure	0.03
Covering body / Hijab (Veil)	0.015
Sun Exposure less than 15 minutes	0.17
Dairy Intake	0.016
Fisher Exact Test	
Duration Between Pregnancies less than 2 years	0.035
Parity	0.015
Lactation status	0.017
Working status	0.362
Smoking	0.013
Anemia	0.000

DISCUSSION:

Wide scale national data is not available to find out the exact prevalence of osteopenia and osteoporosis among Pakistan women while small scale studies provided variable data. According to a study, Asian women have lowest BMD as compared to other

Table I: Socio-Demographic Characteristics of Women (n = 132)		
	Mean + Standard deviation	Range
Age (Year)	34.27 + 9.014	15 - 65
Height (cms)	159.06 cms + 6.3	127-185.42
Weight (Kg)	56 kg + 12.395	30-101
BMI (kg/m ²)	22.2459 + 4.83	12.09-37.10

t-score -6.539+ 1.44 (range -5.88 - 2.9)

regions of the world. Unfortunately the results of our research are not different from other studies as half of the women in the sample had osteopenia.¹¹

The frequency of osteoporosis in present study is comparable to another study done on Pakistani women where it was reported in 12.9% women. The frequency of osteopenia was 43.4% in that study.⁶ Another study done on Pakistani women has reported the frequency of osteoporosis as 16% and osteopenia as 34%.¹⁰ The high rate of the osteopenia in the sample is quite alarming, as most of the women of this sample belonged to pre-menopausal group. Another study done in Karachi concluded that the women belonging to the age group 15- 30 year had low BMD in comparison to those above 45 year of age.¹²

Poverty leads to malnourishment. Osteopenia is a hallmark of malnourishment in these women. As compared to osteopenia frequency of osteoporosis in our study was more or less the same as mentioned in other studies. Our study group was mainly comprised of pre-menopausal women. These women may develop osteoporosis in peri- menopausal and menopausal age if dietary improvement does not occur. It can therefore be predicted that there will be increased burden of the osteoporosis in Pakistani women.⁷

Another study done among resident doctors in Multan reported the frequency of osteopenia and osteoporosis as 71.33% and 9.33% respectively.¹³ This is an alarming trend and must be probed further. Our study group mainly comprised of married women though there were three unmarried women as well. All unmarried women were found to be osteopenic. The risk of osteoporosis and hence osteoporotic fracture is related to peak bone mass (PBM) achieved. Two recent Indian studies reported PBM to be achieved at an average age of 26-30 year.^{14,15} Osteoporotic fracture is related to the peak bone mass achieved.¹⁶

Among the variables which were studied in present study majority had association with BMD. It was suggested that genetic factors account for up to 85% of variation in bone mass, while environmental factors such as calcium and vitamin D deficiency, poor physical activity and poor sunlight exposure account for the rest.¹⁷ Low BMD in Pakistani women may be translated into increased risk of fractures in older age. It has been suggested that osteoporotic fractures occur 10-20 years earlier in Asians (peak age 50-60 year) than Caucasians (70-80 year).¹⁸

Anemia has emerged as one of the strongest

determinant of decreased BMD in our study. Anemia is a marker of malnourishment. Due to dietary deficiency women tend to be more anemic as well as have poor bone health. In our study, only 28.8% women were taking dairy products in their daily diets. The result suggested that proper diet is needed for bone growth, which have also been reported in other studies.¹⁰ Our study showed that there was no significant relation between occupation of women and osteopenia, while in a study from Karachi this trend was not apparent.¹² Thus population based studies are needed.

CONCLUSIONS:

Most of the women in study group had osteopenia in pre-menopausal period. The frequency of osteoporosis was found to be less than osteopenia.

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