Original Article นิพนธ์ต้นฉบับ

Prevalence of Osteoporosis and Osteopenia in Thai Female Patients at Rajavithi Hospital

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Abstract The objective of this retrospectwe study was to determine the prevalence of osteoporosis in female patients who underwent bone mineral density measurement at Rajavithi hospital. Associated risk factors were also determined.

The study included 750 women, age 50 years and over, and evaluated for bone mineral density using Dual energy X-ray absorptiometry at nuclear medicine section in Rajavithi hospital from June 2011 to June 2012. A diagnosis of osteoporosis was made according to WHO criteria.

It was found that the prevalence of osteoporosis at either lumbar spine or femoral neck was 21.6 percent, which consisted of 9 percent with osteoporosis at lumbar spine only, 6.3 percent with osteoporosis at femoral neck only, and 6.3 percent with osteoporosis at both the lumbar spine and femoral neck. The prevalences of osteoporosis were 15.3 percent for lumbar spine and 12.6 percent for femoral neck. The prevalence of osteopenia at either lumbar spine or femoral neck was 59.4 percent, which consisted of 13.6 percent with osteopenia at lumbar spine only, 23.3 percent with osteopenia at the femoral neck only, and 22.5 percent with osteoporosis at both lumbar for femoral neck. The prevalences of osteopenia were 36.1 percent for lumbar spine and 45.8 percent for femoral neck. The prevalence of osteoporosis increased with age after 50 years of age. Osteoporosis group had significantly higher mean age, lower mean height, lower mean bodyweight and lower body mass index than osteopenia and normal groups (p-value <0.001). The prevalences of osteoporosis are in accordant with Thai and Asian reports but higher than those of the United State population. Older age, lower weight, decreased height and low body mass index (BMI) are significant risk factors for osteoporosis.

Key words: **prevalence, osteoporosis, osteopenia, bone mineral density**

Osteoporosis is a disease in which the density and quality of bone are reduced, leading to weakness of the skeleton and increases risk of fracture, particularly of the spine, hip and wrist.[1] Osteoporosis and associated fracture are important causes of mortality and morbidity. Osteoporosis is often called the silent disease because bone loss occurs without symptoms. Patients with osteoporosis may not know that they have been affected until their bones become so weak that a sudden fall causes hip fracture or vertebra collapse.

Nine percent of persons aged 50 years and over in US had osteoporosis at either the lumbar spine or

femoral neck in 2005-2008. Roughly, one-half of older adults in the population had low bone mass at either the lumbar spine or femoral neck. The prevalence of osteoporosis at either skeletal site by age ranged from 7 to 35 percent in women and it increased each decade after age 50 years until age 70 years. After which it remained stable. The prevalence was higher in women and increased with age.[2] Once a woman suffered a first vertebral fracture, there was a five-fold increase in the risk of developing a new fracture within one year.[3]

There are several different methods available to measure bone mineral density (BMD). Dual energy X-ray absorptiometry (DXA) is a standard method to measure BMD worldwide. However DXA differently manufactured yield different BMD values.

According to previous study in Thai women, BMD values for osteoporosis were 0.682 g/cm^2 and 0.569 g/cm^2 for lumbar spine and femoral neck respectively. BMD values for osteopenia were 0.842 g/cm^2 and 0.716 g/cm^2 for lumbar spine and femoral neck respectively.[4] The age-specific prevalence of osteoporosis among Thai women less than 50 years of age was less than 5 percent. The prevalence increased after the age of 50, and rose progressively with increasing age to more than 50 percent after the age of 70.[5] The prevalence of osteoporosis in lumbar spine and femoral neck at Khon Kaen (Thai rural area) were 24.7 percent and 19.3 percent respectively.[6] There were many risk factors of osteoporosis such as sex, age, body weight, BMI, past medical history of fracture, family history of osteoporosis, smoking, alcohol, exercise, income, education, calcium intake, age of menarche, age at the last delivery, number of offspring, menopause, year since menopause and hormone replacement therapy.[7]

This study attempted to assess the prevalence of osteoporosis in female patients at Rajavithi hospital, undergoing DXA at femoral neck and lumbar spine. Associated risk factors were also determined.

Methods

Subject

This was a retrospective study of female patients evaluated by bone densitometry at division of nuclear medicine, Rajavithi hospital from June 2011 to June 2012, They were included in the study if aged 50 years and over and then categorized by age into 3 groups: 50-59, 60-69, and ≥ 70 years. Data were collected from their medical records. Age, weight, height and BMI were only 4 variables used for determination of risk factors. Other factors were not included due to limited data in medical records. The women who got anti-osteoporotic medications were excluded from the study. Based on the prevalence of osteoporosis 19.8 percent[8] with an acceptable error of 5 percent and an α error of 0.05, the total sample size was 750 cases (250×3). BMD measurements using DXA were performed at lumbar spine and femoral neck.

Measurement and definition

BMD was measured by DXA (Lunar Prodigy, GE Medical system). World Health Organization (WHO) proposed diagnostic guidelines for osteoporosis in women using bone mineral density (BMD) measurements.[9] WHO definition categorizes: osteopenia is BMD between 1 and 2.5 standard deviation (SD) below average young adult value, whereas osteoporosis is BMD more than 2.5 SD below average young adult. Using young adult Japanese reference BMD values of lumbar spine and femoral neck 1.110 g/cm^2 (SD 0.12) and 0.900 g/cm^2 (SD 0.12) respectively were assessed. BMD measurements by DXA were conducted in the regions from first to fourth lumbar vertebrae (L1-L4) and femoral neck.

BMI was calculated as weight divided by height squared (kg/m^2). BMI for Asians people was lower

Table 1 Baseline characteristics of the study women (n=750 women)

Characteristics	Mean	SD	Min	Max
Age (years)	65.04	9.86	50	92
50-59 n (%)	*250 (33.3)*			
60-69 n (%)	*250 (33.3)*			
≥ 70 n (%)	*250 (33.3)*			
Height (cm)	152.34	5.91	133.5	169.2
Weight (kg)	57.83	10.50	33.2	107.5
BMI (kg/m^2)	24.91	4.26	13.82	43.82
Underweight n(%)	*32 (4.3)*			
Normal weight n(%)	*216 (28.8)*			
Overweight n(%)	*172 (22.9)*			
Obesity n(%)	*330 (44.0)*			
Femoral neck BMD (g/cm^2)	0.76	0.13	0.45	1.26
Lumbar spine BMD (g/cm^2)	0.99	0.18	0.01	1.81

than white people due to high percentage of body fat.[10] For Thai women, BMI categories were as follow: less than 18.5 kg/m^2: underweight; 18.5 - 22.9 kg/m^2: normal; 23.0 - 24.9 kg/m^2: overweight; ≥ 25 kg/m^2: obesity.[11]

Data analysis

Descriptive statistics were used to describe characteristics as mean, standard deviation (SD) and percent. Comparison between two groups using Turkey method, p-value less than 0.05 was considered statistically significant and 95 percent confidence interval were reported. Prevalence of osteoporosis and osteopenia were calculated in percentage of patients who had diseases at femoral neck and/or lumbar spine in total women patients evaluation by undergoing bone densito-metry.

Results

The mean age of 750 women in this study was 65.04 years with SD 9.86, range 50-92. Mean height, weight and body mass index were 152.34 cm, 57.83 kg and 24.91 kg/m^2 respectively (Table 1). About 44 percent and 22.9 percent of women aged 50 years and over in this study were obesity and overweight respectively (Figure 1).

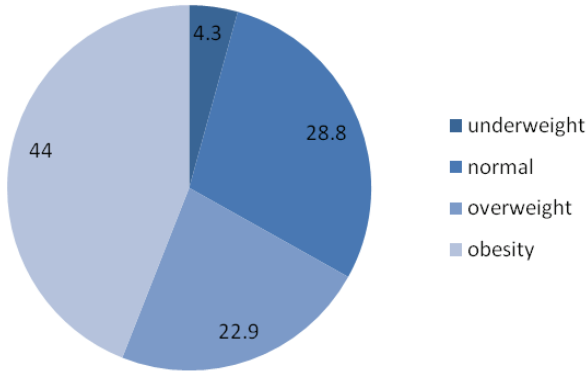

Figure 1 Percent distribution of body mass index of thr study women

The prevalence of osteoporosis at either the lumbar spine or femoral neck was 21.6 percent which consisted of 9 percent with osteoporosis at lumbar spine only, 6.3 percent with osteoporosis at the femoral neck only, and 6.3 percent (95% CI, 4.8-8.2) with osteoporosis at both the lumbar spine and femoral neck. The prevalences of osteoporosis were 15.3 percent and 12.6 percent for lumbar spine and femoral neck respectively.

Table 2 Distribution of prevalence of osteopenia and osteoporosis at femoral neck or lumbar spine

	Normal (n 238) (%)	Osteopenia (n 350) (%)	Osteoporosis (n 162) (%)	Total (%)	95% confidence interval
Femoral neck normal & lumbar spine normal	238 (100)	-	-	238 (31.8)	28.5 - 35.2
Femoral neck osteopenia & lumbar spine osteopenia	-	169 (48.3)	-	169 (22.5)	19.7 - 25.7
Femoral neck osteopenia & lumbar spine normal	-	114 (32.6)	-	114 (15.2)	12.8 - 18.0
Femoral neck normal & lumbar spine osteopenia	-	67 (19.1)	-	67 (8.9)	7.1 - 11.2
Femoral neck osteopenia & lumbar spine osteoporosis	-	-	61 (37.7)	61 (8.1)	6.4 - 10.3
Femoral neck osteoporosis & lumbar spine osteoporosis	-	-	47 (29.0)	47 (6.3)	4.8 - 8.2
Femoral neck osteoporosis & lumbar spine osteopenia	-	-	35 (21.6)	35 (4.7)	3.4 - 6.4
Femoral neck osteoporosis & lumbar spine normal	-	-	12 (7.4)	12 (1.6)	0.9 - 2.8
Femoral neck normal & lumbar spine osteoporosis	-	-	7 (4.3)	7 (0.9)	0.5 - 1.9

Values were represented as Number (Percentage)

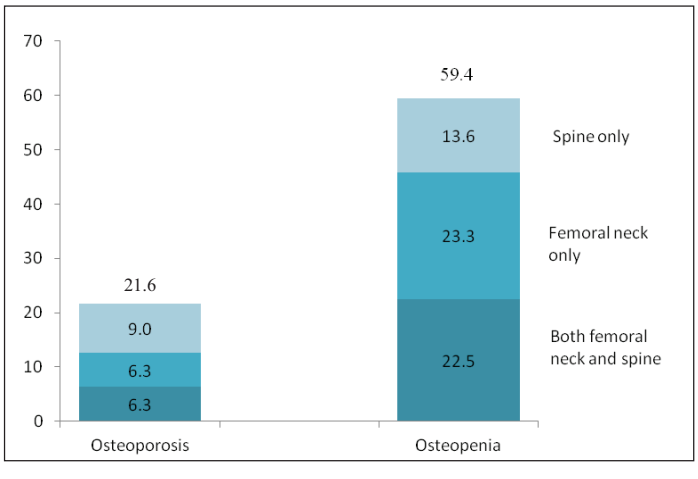

Figure 2 Prevalence of osteoporosis and osteopenia at the femoral neck, lumbar spine or either site in women aged 50 years and over

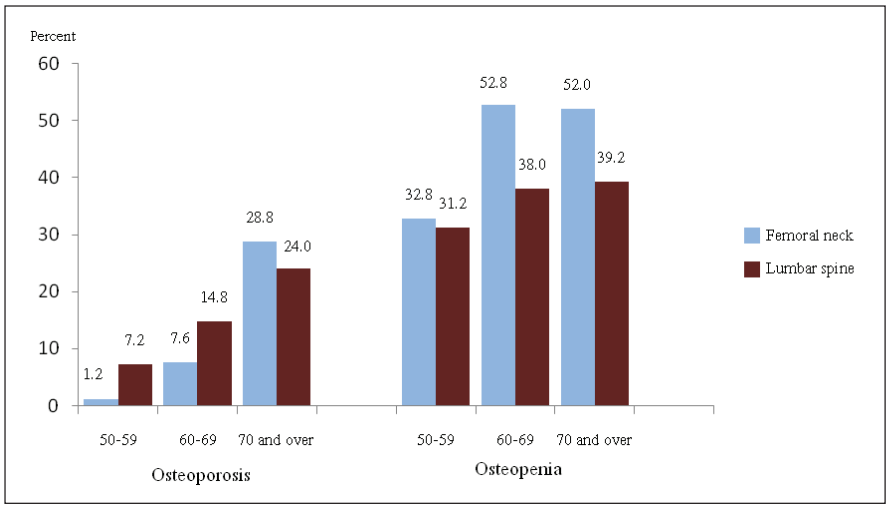

Figure 3 Osteoporosis and osteopenia at the femoral neck or lumbar spine by age group

Table 3 Characteristic of normal, osteopenia and osteoporosis women

	Normal (n 238)	Osteopenia (n 350)	Osteoporosis (n 162)	p-value
Age (years)	59.84, 7.95^{A}	65.55, 9.35^{B}	71.59,9.27^{C}	<0.001*
Height (cm)	154.89, 5.61^{A}	151.68, 5.64^{B}	150.04,5.61^{C}	<0.001*
Weight (kg)	62.09,10.95^{A}	57.33, 9.90^{B}	52.67,8.35^{C}	<0.001*
BMI (kg/m^2)	25.89, 4.41^{A}	24.93, 4.18^{B}	23.44,3.76^{C}	<0.001*
Underweight (%)	*5 (2.1)*	*14 (4.0)*	*13 (8.0)*	
Normal weight (%)	*53(22.3)*	*103 (29.4)*	*60 (37.0)*	
Overweight (%)	*52(21.8)*	*78 (22.3)*	*42 (25.9)*	
Obesity (%)	*128(53.8)*	*155 (44.3)*	*47 (29.0)*	

Values were represented as Mean, SD and Number (Percentage)
**p-value < 0.05*
A,B,C were represented multiple comparison between two groups using Turkey method. Difference character means statistically significant difference at p < 0.05.

The prevalence of osteopenia at either the lumbar spine or femoral neck was 59.4 percent (, which consisted of 13.6 percent with osteopenia at lumbar spine only, 23.3 percent with osteopenia at the femoral neck only, and 22.5 percent (95% CI, 19.7-25.7) with osteoporosis at both the lumbar spine and femoral neck. The prevalences of osteopenia were 36.1 percent and 45.8 percent for lumbar spine and femoral neck respectively (Table 2, Figure 2).

The prevalence of osteoporosis at lumbar spine and femoral neck increased by age ranged from 1.2 percent to 28.8 percent and 7.2 percent to 24 percent respectively. The prevalence of osteopenia at lumbar spine increased by age ranged from 31.2 percent to 39.2 percent and from 32.8 percent to 52.8 percent for femoral neck (Figure 3).

Osteoporosis group had significantly higher mean age, lower mean height, lower mean bodyweight and lower body mass index than osteopenia group (p-value <0.001). Osteopenia group had significantly higher mean age, lower mean height, lower mean body weight and lower body mass index than those of the normal group. (p<0.001) as shown in Table 3.

Discussion

Osteoporosis is associated mostly with menopause due to decrease in estrogen levels accelerate bone resorption. This alters balance between bone removal and replacement. According to Thai BMD standard, the age-specific prevalence of osteoporosis among Thai women below 50 years of age was less than 5 percent.[4] The prevalence rose progressively with increasing age to more than 50 percent after the age of 70. Limpaphayom KK et al[5] confirmed that the prevalence of osteoporosis among Thai women increased markedly after menopause. So screening osteoporosis at early menopause is important since this disease causes silent fractures which are associated with high morbidity and mortality. Subsequently, its high healthcare cost will affect the expenditures of national public health.

BMD measured by DXA was recognized world wide as the standard predictor for fracture occurrence.[1] It was useful for health care policy to detect women with low BMD (osteopenia and osteoporosis) or high risk fracture particularly starting from the onset of menopause in women around 50 years of age.[12]

There was a strong inverse correlation between BMD and the risk of fracture, with a doubling in fracture incidence for each standard deviation reduction in BMD.[13] Practically, the risk assessment for perimenopausal or early menopausal women should be performed and the women at-risk might be evaluated by BMD. Thai health economic analysis recommended that screening by risk index and DXA with treatment strategies was the most cost-effective.[14]

The prevalence of osteoporosis at either lumbar spine or femoral neck was 21.6 percent in the present study which was in range 7-35 percent of prevalence of osteoporosis in other studies.[1] Additionally, the prevalence of osteoporosis at the lumbar spine or femoral neck when considered separately were 15.3 percent and 12.6 percent. The prevalence of osteopenia at the lumbar spine or femoral neck when considered separately were 36.1 percent and 45.8 percent. Limpaphayom KK et al[5] reported the age-adjusted prevalence of osteoporosis of 19.8 percent at lumbar spine and 13.6 percent at femoral neck using the Thai BMD reference. The study in Khon Kaen province showed higher prevalence of osteoporosis at lumbar spine or femoral neck 24.7 percent and 19.3 percent respectively.[6] The prevalence of osteoporosis at either skeletal sites in the present study were lower than the studies by Limpaphayom KK et al[4] and Pongchaiyakul C et al[6]. The reasons for difference were probably many risk factors of rural women in their studies with less monthly income, lower educated subjects, poor diet and lower BMI.

The prevalence of osteoporosis and osteopenia at either lumbar spine or femoral neck also differed by race and ethnicity in women. Looker AC, et al[2] reported that the age-adjusted prevalence of osteoporosis and osteopenia at either skeletal site was higher in Mexican-American women (26%,72%) and lower in non-Hispanic white women (15%,62%) and non Hispanic black women (9%,44%). Non-Hispanic black women tended to be at lower risk of either osteoporosis or osteopenia at the lumbar spine or femoral neck.[2]

For Asian populations, the reported prevalence of osteoporosis in Korean women older than 50 years of age were 24 percent at lumbar spine and 5.7 percent at femoral neck and lumbar spine respectively.[7] In comparison, a higher prevalence was revealed among Japanese woman aged between 50 and 79 years; 35 percent at the lumbar spine and 12 percent at the femoral neck.[15] BMD had been reported to be lower in Asian than Caucasian adults.[16-18] The racial difference might be the result of differences in life style such as food intake and physical exercise. In addition, BMD of Caucasian populations were higher when compared to Oman[19], United Arab Emirates[20], Lebanese[21], Saudi[22] And Kuwaiti[23] female populations using DXA.

The prevalence of osteoporosis at either skeletal site by age ranged from 1.2 percent to 28.8 percent in this study. The prevalence of osteopenia at either skeletal site by age ranged from 31.2 to 52.8 percent. The prevalence of osteoporosis increased for each decade after age 50 years. This result corresponds to report from Looker AC et al[2] However, the prevalence of osteopenia increased until age 60 years, after which it remained stable. Looker AC et al[2] reported that the prevalence of osteopenia in women increased until age 70 years and then remained stable. In the present study, the prevalence of osteoporosis at lumbar spine was significantly higher than that at the femoral neck: lumbar spine/femoral neck 7.2 percent/1.2 percent in 50-59 years group, 14.8 percent/7.6 percent in 60-69 years group. However, the prevalence of osteoporosis at lumbar spine was slightly lower than at the femoral neck: lumbar spine /femoral neck 24 percent/28.8 percent in ≥ 70 years group.

Additionally, the prevalence of osteoporosis at either lumbar spine or femoral neck in this study increased with progression of aging from 50 years to

70years or more. Jarupanich T[8] reported in 2007 (1796 women with BMD measurement at Hat Yai Regional Hospital) that the prevalence of osteoporosis at lumbar spine was up to ten times or more, higher than at femoral neck: lumbar spine/femoral neck 1.0 percent/0.1 percent in premenopausal group, 5.7 percent/0 percent in the early group of menopause, and 10.0 percent/0.6 percent in the late group of menopause respectively. These confirm the usual discordance in diagnosis of osteoporosis at lumbar spine and femoral neck when using BMD measurement.

The data presented in this study showed that the osteoporosis group had significantly higher mean age, lower mean body weight, lower mean height and lower BMI than osteopenia and normal groups. (p-value <0.001) These findings corresponded to the report by Tanprasertkul C, et al[24] that older age, lower weight, decreased height and low BMI were significant risk factors for osteoporosis (p-value <0.001). Age and weight were also two factors for calculation in Osteoporosis Self-assessment Tool for Asians (OSTA) index to predict low BMD which was firstly described by Koh LK, et al.[25] Low BMI was well established risk factor for future fracture, largely independent of age and sex.[26,27] The combination of BMI and age as the index to detect osteoporosis at lumbar spine or femoral neck had a sensitivity at 76.7 percent and 76 percent respectively.[24]

This study had several limitations such as no data collection of other clinical risks for osteoporosis: current smoking, alcoholism, history of fracture, diet, etc. Accuracy error of BMD measurement should be also noticed.

Conclusion

The prevalence of osteoporosis at either lumbar spine or femoral neck is 21.6 percent. The prevalences of osteoporosis at the lumbar spine or femoral neck when considered separately are 15.3 and 12.6 percent respectively. These prevalences are in accordant with previous Thai and Asian reports but higher than those of United States population. The prevalence of osteopenia at the lumbar spine or femoral neck when considered separately are 36.1 percent and 45.8 percent. Older age, lower weight, decreased height and low body mass index (BMI) are significant risk factors for osteoporosis.

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References

1. Kanis JA. Diagnosis of osteoporosis and assessment of fracture risk. Lancet 2002;359:1929-36.
2. Looker AC, Borrud LG, Dawson-Hughes B, Shepherd JA, Wright NC. Osteoporosis or low bone mass at the femur neck or lumbar spine in older adults: United States, 2005-2008. NCHS data brief No 93 April 2012. [online] Available from: URL: http://www.cdc.gov/nchs/data/databriefs/db93.htm
3. Lindsay R, Silverman SL, Cooper C, Hanley DA, Barton I, Broy SB, et al. Risk of new vertebral fracture in the year following a fracture. JAMA 2001; 285:320-3.
4. Limpaphayom K, Taechakraichana N, Jaisamrarn U, Bunyavejchevin S, Chaikittisilpa S, Poshyachinda M, et al. Bone mineral density of lumbar spine and proximal femur in normal Thai women. J Med Assoc Thai 2000;83:725-31.
5. Limpaphayom K, Taechakraichana N, Jaisamrarn U, Bunyavejchevin S, Chaikittisilpa S, Poshyachinda M, et al. Prevalence of osteopenia and osteoporosis in Thai women. Menopause 2001;8:65-9.
6. Pongchaiyakul C, Rojroongwasinkul N, Chotmongkol R, Kosulwat V, Charoenkiatkul S, Rajatanavin R. Bone mineral density in rural Thai adults living in Khon-Kaen province. J Med Assoc Thai 2002;85:235-44.
7. Shin CS, Choi HJ, Kim MJ, Kim JT, Yu SH, Koo BK. et al. Prevalence and risk factors of osteoporosis in Korea: a community-based cohort study with lumbar spine and hip bone mineral density. Bone 2010; 47(2):378-87.

8. Jarupanich T. Prevalence and risk factors associated with osteoporosis in women attending menopause clinic at Hat Yai regional hospital. J Med Assoc Thai 2007; 90(5):865-9.
9. WHO assessment of fracture risk and its application to screening for postmenopausal osteoporosis. Report of WHO Study Group. World Health Organ Tech Repser 1994;843:1-129.
10. WHO expert consultation. Appropriated body-mass index for Asian populations and its implications for policy and intervention strategies. Lancet 2004;363:157-63.
11. Pongchaiyakul C, Nguyen TV, Kosulwat V, Rojroongwasinkul N, Charoenkiatkul S, Sanchaisuriya P, et el. Defining obesity by body mass index in the Thai population: an epidemiologic study. Asia Pac J Clin Nutr 2006;15(3):293-9.
12. Ozkan S, Alatas ES, Zencil M. Women'squality of life in the premenopausal and postmenopausal periods. Quality Life Res 2005;14:1795-801.
13. Marshall D, Johnell O, Wedel H. Meta-analysis of how well measures of bone mineral density predict occurrence of osteoporotic fracture. BMJ 1996; 312:1254-9.
14. Panichkul S, Panichkul P, Sritara C, Tamdee D. Cost-effectiveness analysis of various screening methods for osteoporosis in perimenopausal Thai women. Gynecol Obstet Invest 2006;62:89-96.
15. Iki M, Kagamimori S, Kagawa Y, Matsuzaki T, Yone Shima H, Marumo F. Bone mineral density of the spine, hip and distal forearm in representative samples of the Japanese female population: Japanese population-based Osteoporosis (JPOS) study. Osteoporosis Int 2001; 12(7):529-37.
16. Tobias JH, Cook DG, Chambers TJ, Dalzell N. A comparison of bone mineral density between Caucasian Asian and Afro-Caribbean women. Clin Sci 1979; 87:587-91.
17. Walker MD, Babber R, Opotowsky AR, Rohira A, Nabizadeh F, badia MD. et al. A referent bone mineral density database for Chinese American women. Osteoporosis 2006;17:878-87.
18. Nohara T, Kamei T, Ohta A. Acceleraed decrease in bone mineral density in women aged 52-57 years. Tohoku J Exp Med 2006;210:341-7.
19. Bererhi H, Constable A, Lindell SE, Coutino J, Kharousi W. A study of bone mineral density versus age in Omani women and a comparison with normal British women. Nucl Med Commun 1994;15:99-103.
20. Bener A, Rizk DE, Shaheen H, Micallef R, Osman N,Dunn EV. A measurement-specific quality of life satisfaction during menopause in an Arabian Gulf Country. Climacteric International Journal of Menopause 2000;3:43-9.
21. Maalouf G, alem S, Sandid M, Attallah P, Eid J, Saliba N, et al. Bone mineral density of the Lebanese reference population. Osteoporosis Int 2000;11(9):756-64.
22. Al -Nuaim AR, Kremli M, Al-Nuaim M, Sandkgi S. Incidence of proximal femur fracture in urbanized community in Saudi Arabia. Calcif Tissue Int 1995;56:536-8.
23. Faulkner KG, Von Stetten E, Miller P. Discordancein patient classification using T-scores. J Clin Densitometry 1999;2:343-50.
24. Tanprasertkul C, Wattanaruangkowit P, Panyakhamlerd K. The combination of body mass index and age as a new index for identifying osteoporosis in Thai postmenopausal women. J Med Assoc Thai 2010;93(7): s76-82.
25. Koh LK, Sedrine WB, Torralba TP, Kung A, Fujiwara S, Chan SP, et al. A simple tool to identify asian women at increased risk of osteoporosis. Osteoporosis Int 2001; 12:699-705.
26. De Laet C, Kanis JA, Oden A, Johanson H, Johnell O, Delmas P, et al. Body mass index as a predictor of fracture risk: a meta-analysis. Osteoporosis Int 2005; 16:1330-8.
27. Ensrud KE, Lipschutz RC, Cauley JA, Seeley D, Nevitt MC, Scott J, et al. Body size and hip fracture risk in older women: a prospective study (Study of Osteoporotic Fractures Research Group). Am J Med 1997; 103:274-80.

บทคัดย่อ **ความชุกภาวะกระดูกพรุน และกระดูกบาง ในผู้ป่วยสตรีที่ตรวจมวลกระดูกในโรงพยาบาลราชวิถี**

สุรีรัตน์ แสงสุดา

โรงพยาบาลราชวิถี กรมการแพทย์

วารสารวิชาการสาธารณสุข **2556; 22:242-250.**

การศึกษานี้มีวัตถุประสงค์เพื่อศึกษาความชุกและปัจจัยเสี่ยงของภาวะกระดูกพรุนในผู้ป่วยสตรีที่มาตรวจมวลกระดูกในโรงพยาบาลราชวิถีโดยศึกษาย้อนหลังในผู้ป่วยสตรี 750 รายที่มีอายุ 50 ปีขึ้นไปที่มาตรวจมวลกระดูกด้วยเครื่องเอกซเรย์ชนิด 2 พลังงานที่งานเวชศาสตร์นิวเคลียร์ โรงพยาบาลราชวิถี ตั้งแต่เดือนมิถุนายน 2554 ถึง มิถุนายน 2555 เกณฑ์การวินิจฉัยภาวะกระดูกพรุนใช้ตามข้อกำหนดขององค์การอนามัยโลก พบว่าความชุกของภาวะกระดูกพรุนที่กระดูกสันหลังส่วนเอวหรือกระดูกคอสะโพกเท่ากับร้อยละ 21.6 ซึ่งประกอบด้วยความชุกที่กระดูกสันหลังส่วนเอวตำแหน่งเดียวร้อยละ 9 และความชุกที่คอสะโพกตำแหน่งเดียวร้อยละ 6.3 และความชุกทั้ง 2 ตำแหน่งร้อยละ 6.3 ความชุกภาวะกระดูกพรุนที่กระดูกสันหลังส่วนเอวและกระดูกคอสะโพกเท่ากับร้อยละ 15.3 และ 12.6 ตามลำดับ ความชุกของภาวะกระดูกบางที่กระดูกสันหลังส่วนเอวหรือกระดูกคอสะโพกเท่ากับร้อยละ 59.4 ซึ่งประกอบด้วยความชุกที่กระดูกสันหลังส่วนเอวตำแหน่งเดียวร้อยละ 13.6 และความชุกที่คอสะโพกตำแหน่งเดียวร้อยละ 23.3 และความชุกทั้ง 2 ตำแหน่งร้อยละ 22.5 ความชุกภาวะกระดูกบางที่กระดูกสันหลังส่วนเอวและกระดูกคอสะโพกเท่ากับร้อยละ 36.1 และ 45.8 ตามลำดับ ความชุกของภาวะกระดูกพรุนเพิ่มขึ้นตามอายุในสตรีที่อายุมากกว่า 50 ปี กลุ่มสตรีที่มีภาวะกระดูกพรุนมีอายุเฉลี่ยมากกว่า มีความสูงน้อยกว่า มีน้ำหนักน้อยกว่า และมีดัชนีมวลกายน้อยกว่า กลุ่มสตรีที่มีภาวะกระดูกบาง และกลุ่มสตรีที่มีมวลกระดูกปกติอย่างมีนัยสำคัญ ($p<0.001$)

ความชุกภาวะกระดูกพรุนในผู้ป่วยสตรีที่มาตรวจมวลกระดูกในโรงพยาบาลราชวิถีสอดคล้องกับในสตรีไทยและสตรีเอเชียจากงานวิจัยที่ผ่านมา แต่มีค่าสูงกว่าในสตรีชาวอเมริกัน ปัจจัยเรื่องอายุ ความสูง น้ำหนักและดัชนีมวลกายมีความสัมพันธ์กับการเกิดภาวะกระดูกพรุนอย่างมีนัยสำคัญ

คำสำคัญ: **ความชุก, กระดูกพรุน, กระดูกบาง, มวลกระดูก**