Current Knowledge on Osteoporosis Among Women in Muang District of Phitsanulok

Supawitoo Sookpeng

Department of Radiological Technology, Faculty of Allied Health Science, Naresuan University, Phitsanulok 65000, Thailand.
Corresponding author. E-mail address: supawitoo_s@yahoo.com (S. Sookpeng)

Abstract

This study aimed to assess women's knowledge on osteoporosis. The knowledge was assessed by an osteoporosis quiz composed of eighteen questions which were categorized into three subgroups: general knowledge on osteoporosis, risk factors associated with osteoporosis, preventive behavior and treatment of osteoporosis. One hundred and eighty four women from Phitsanulok, aged from 40 to 79 years old, were asked to complete questionnaires and the osteoporosis quizes. The total score on the osteoporosis quizes was 18 and the mean score obtained in this study was 13.46 (SD= 2.18; range = 8 to 18). Significant differences were found between respondents who had previously received information on osteoporosis and those who had not (mean score of 14.22 ± 1.90 and 12.16 ± 1.97, respectively; $p<0.001$), and between postmenopausal and premenopausal women (mean score of 13.16 ± 2.33 and 13.87 ± 1.88, respectively; $p=0.028$). There was a strong correlation between years of education and knowledge on osteoporosis ($r=0.590$, $p=0.01$). The findings indicated that women had less knowledge of risk factors associated with osteoporosis than general knowledge on osteoporosis as well as preventive behavior and treatment of osteoporosis. Thus, future planning for health education campaigns should target on people at higher risk for osteoporosis focusing especially on education of risk factors associated with the condition.

Keywords: Knowledge, Osteoporosis, Women, Phitsanulok

Introduction

Osteoporosis is recognized as a severe public health problem. It is a bone disease in which the amount of bone decreases and the structural integrity of trabecular bone is impaired (Avioli, 1993). There are many factors related to osteoporosis development including: being female (80% of osteoporosis occurs in women), increasing age, being postmenopausal, estrogen deficiency, ethnic heritage, thin, slight body frame and lifestyles such as smoking, alcohol use, high caffeine use, lack of exercise and low intake of calcium and vitamin D (Cumming et al., 1997; Gregg et al., 1998; Hoidrup et al., 2001; Lau et al., 2001).

Building strong bones during childhood and adolescence may be the best defense against developing osteoporosis at later age. There are several ways which when combined together can optimize bone health and help to prevent osteoporosis, such as a balanced diet rich in calcium and vitamin D, weight-bearing exercise, a healthy lifestyle with no smoking or excessive alcohol intake, bone density testing and medication if appropriate (Bauer, 1993; Greenspan, 1994). Moreover, receiving some knowledge and education will result in better health status through changes in health behavior (Lorig et al., 1987). Patient education programs are also acknowledged as an effective way of imparting disease-related knowledge to the patients (Edworthy et al., 1995).

A number of studies have assessed women's knowledge of osteoporosis. Kristal and associates conducted a research study using questionnaires to assess knowledge on osteoporosis risk factors among adolescent females (Kristal et al., 2003). The finding indicated that their knowledge was inadequate. Rubin and Cumming (1992) found that when women with low bone mass were given information on osteoporosis, they subsequently increased their preventive behavior.

Health promotion was the process of helping people to change their lifestyle to move toward a state of optimal health (Definition of health promotion, 1989). Health education was the combination of learning and being informed to develop knowledge, attitude and skills (Definition of term, 2006). Both health promotion and health education were very important to

increase the population's awareness and practice of a healthy lifestyle. So, the purpose of this study was to assess knowledge of osteoporosis among women in Muang District of Phitsanulok, and to identify specific triggers to provide osteoporosis prevention counseling in order to combat this serious public health problem in Phitsanulok.

Materials and Methods

This descriptive study examined women's knowledge on osteoporosis. All participants with age more than 40 years old who joined our bone mineral density measurement service project (December 2005) were asked to answer a questionnaire. The questionnaire gathered information on age, years of education, menopausal status, previous information on osteoporosis, knowing someone with osteoporosis and source of information about osteoporosis. Thereafter, the osteoporosis quiz was used to assess knowledge of osteoporosis. The osteoporosis quiz items were based on a literature review and consisted of eighteen true or false questions. The content of the eighteen questions was categorized into three subgroups: (a) "general knowledge about osteoporosis" (5 questions), (b) "risk factors associated with osteoporosis" (6 questions), and (c) "preventive behavior and treatment of osteoporosis" (7 questions). The content validity of the questionnaire was determined by two experts who conducted researches on osteoporosis (an instructor in Radiological department and an orthopaedic doctor). To pre-test and refine the questionnaire, interviewers asked the respondents for feedback to identify ambiguities and difficult to understand questions. The pilot study was conducted among 20 elderly women for face validation and comprehension. Internal consistency reliability, based on Kuder-Richardson 20 (KR-20) was 0.65 in the pre-test. Each item scores one point and the total score on the quiz was eighteen. Higher scores indicated more knowledge. Trained research assistants collected data by face to face interviews. Respondents were invited to complete the quiz and questionnaire while they were waiting to be measured for bone mineral density (BMD) and given their results and some advice.

The independent sample t-test was used to compare the differences in the correct response values between groups. Correlation analysis using the Spearman's rho correlation coefficient (1.00 = perfect correlation; 0 = no correlation at all) was used to test the relationship of knowledge scores and variables such as years of education. Multiple regression was used to test the relationship between several independent variables and the mean quiz score. A p-value of less than 0.05 was considered statistically significant.

Results

A total of 184 women respondents aged from 40 to 79 years olds were recruited into the study. The respondent's characteristics including education level, menopausal status, previous information on osteoporosis and knowing someone with osteoporosis as well as the mean scores classified by respondents' characteristics are shown in Table 1 .The mean score on the osteoporosis quiz was 13.46 (SD= 2.18; range = 8 to 18). The mode and median score was 13, indicating that half of the subjects responded correctly at least 72.22% of the knowledge tested. The percentage of correct responses to each item is shown in Table 2. On average, the respondents had 80.98% correct answers on general knowledge of osteoporosis items and 80.90% on prevention and treatment of osteoporosis items. However, the respondents had the lowest number of correct responses (62.50%) to items on risk factors associated with osteoporosis.

Table 1 Respondents' characteristics and quiz scores

Respondents' Characteristics	Number(%)	Mean Score ± SD
Total	184(100)	13.46±2.18
Age (years old)		
40-49	71(38.6)	14.32±1.87
50-59	65(35.3)	12.97±2.13
60-69	37(20.1)	13.33±2.15
70-79	11(6.0)	11.27±2.10
Highest education levels		
No education	9(4.9)	11.78±0.83
Primary school	85(46.2)	12.18±1.88
Secondary school	16(8.7)	14.18±1.42
Bachelor's degree	31(16.8)	15.16±1.73
Master's degree or higher	43(23.4)	14.86±1.50
Menopausal status		
Premenopausal status	78(42.4)	13.16±2.33
Postmenopausal status	106(57.6)	13.87±1.88
Having previously received information on osteoporosis		
Yes	90(48.9)	14.22±1.90
No	94(51.1)	12.16±1.97
Knowing someone with osteoporosis		
Yes	73(39.7)	13.68±2.31
No	111(60.3)	13.32±2.08

Table 2 Percentage of correct responses on the osteoporosis quiz

Item	Correct Responses N (%)
1. Osteoporosis occurs mostly in children.	172 (93.5)
2. Osteoporosis can be prevented and treated by vaccination.	131 (71.2)
3. Vitamin D is essential for bone density and strength.	134 (72.8)
4. Curvature of the spine (kyphosis) is the symptom of osteoporosis.	133 (72.3)
5. Weight-bearing exercise such as walking and weight-lifting are likely to cause osteoporosis	127 (69.0)
6. The chances of breaking bones increase in people with osteoporosis.	179 (97.3)
7. Lack of estrogen increases the risk of developing osteoporosis.	136 (73.9)
8. Milk consumption is a way to prevent osteoporosis.	172 (93.5)
9. High caffeine intake increases the risk of osteoporosis.	129 (70.1)
10. Osteoporosis can be prevented.	181 (98.4)
11. Current cigarette smoking is not an osteoporosis risk factor.	111 (60.3)
12. A person with osteoporosis person should not exercise.	126 (68.5)
13. Heredity does not play a role in osteoporosis.	94 (49.5)
14. Consumption of green- leaf vegetables is one way to improve bone density and strength.	175 (95.1)
15. Osteoporosis is a contagious disease.	161 (87.5)
16. Thin- persons are more likely to develop osteoporosis than others.	51 (27.7)
17. A balanced diet rich in calcium is an osteoporosis prevention.	177 (96.2)
18. There is no way to treat osteoporosis.	91 (49.5)

Questions about "general knowledge on osteoporosis": 4, 6, 10, 15, and 18
Questions about "risk factors associated with osteoporosis": 1, 7, 9, 11, 13, and 16
Questions about "prevention and treatment of osteoporosis": 2, 3, 5, 8, 12, 14, and 17

The respondents who had previously received information on osteoporosis scored significantly higher than those who had not (mean score of 14.22 ± 1.90 and 12.16 ± 1.97, respectively; $t = 3.59$, $p < 0.001$). The respondents who were postmenopausal scored significantly higher than those who were premenopausal (mean score of 13.87 ± 1.88 and 13.16 ± 2.33, respectively; $t = 2.21$, $p < 0.028$).

There was a strong correlation between years of education and knowledge of osteoporosis ($r = 0.618$, $p = 0.01$). There was a significant correlation between having previously received information on osteoporosis and knowledge of osteoporosis ($r = 0.377$, $p = 0.01$), between age and knowledge of osteoporosis ($r = 0.316$, $p = 0.01$) and between menopausal status and knowledge of osteoporosis ($r = 0.198$, $p = 0.05$).

Multiple regression analyses showed that the highest education levels, menopausal status, age and knowing someone with osteoporosis were significantly associated with the quiz score (beta=0.571; $p < 0.001$, beta=0.238; $p = 0.006$, beta=0.273; $p = 0.001$, and beta=0.252; $p = 0.001$, respectively). The equation to predict the quiz score is as follow:

Quiz score = $8.565 + 1.030 X_1 + 1.034 X_2 + 0.668 X_3 + 0.867 X_4$; when X_1, X_2, X_3 and X_4 represent the highest education levels, menopausal status, age and knowing someone with osteoporosis, respectively.

Data on sources of information on osteoporosis revealed that television was the major source of information (22.8%), followed by book (20.7%), friends and family (12%), newspaper (10.9%) and radio (3.3%).

Discussion

This research showed that the majority of women had good knowledge on general information of osteoporosis, and preventive behavior and treatment of osteoporosis

(80.98% and 80.90% of the correct answers). However, they had the lowest number of correct answers on osteoporosis risk factors (62.50%).

The results from this study indicated that education level was a major determinant of women's knowledge on osteoporosis. The high correlation suggests that the more educated the woman, the more informed she was about osteoporosis. In addition, women who had previously received information on osteoporosis were more knowledgeable about osteoporosis.

It was noticeable that postmenopausal women had more knowledge on osteoporosis than premenopausal women. This may be due to the fact that postmenopausal women would have been informed about osteoporosis risk factors and preventative behaviors by health care providers. However, women who had a family member or friend with osteoporosis were not more knowledgeable about than those with no family member or friends with osteoporosis.

Several reasons may have contributed to the higher score in this study. First, 40.2 % of the subjects were graduates with bachelor degree or higher. Second, the respondents who joined our BMD measurement service project were the persons who pay attention in health care service, concern in keeping healthy and quest for knowledge on osteoporosis. Last, the respondent could have guessed in some items of the osteoporosis quiz because the response categories were only true or false. So, further researches should be designed with more response categories to include the true, false and not knowing the answer. This may allow the subjects to answer each question more truthfully.

Based on the results of this study, the majority of the respondents indicated that the major sources of their information about osteoporosis were television and books (22.8% and 20.7%, respectively). Thus, future planning should include health education campaigns to target people at higher risk with special focus on risky behaviors because the findings indicated that women had the lowest number of correct answers (62.50%) on this part. Moreover, it is important to promote osteoporosis protective practice among younger women because lifestyle practice and behavior form easier in early life and may transfer into adulthood.

Conclusions

In this study, women had less knowledge of risk factors associated with osteoporosis than general knowledge on osteoporosis as well as preventive behavior and treatment of osteoporosis. Future planning for health education campaigns should target on people at higher risk for osteoporosis focusing especially on education of risk factors associated with the condition.

Acknowledgements

References

Avioli, L. V. (1993). *The Osteoporosis Syndrome*. New York: Wiley-Liss.

Bauer, D. C. (1993). Factors associated with appendicula bone mass in older women: The study of osteoporotic fractures research group. *Annals of Internal Medicine*, *118*, 657-665.

Cumming, R. G., Cummings, S. R., Nevit, M. C., Scott, J. T., Ensrud, D. E., Vogt, T. M., et al. (1997). Calcium intake and fracture risk: Results from the study of osteoporotic fractures. *American Journal of Epidemiology*, *145*, 926-934.

Definition of health promotion. (1989). Retrieved February 24, 2006, from http://www.healthpromotionjournal.com/

Definition of term. (2006). Retrieved February 24, 2006, from http://www.unicef.org/lifeskills/index_7308.html.

Edworthy, S. M., Devins, G. M., & Watson, M. M. (1995). The arthritis knowledge questionnaire: A test for measuring patient knowledge of arthritis and its self-management. *Arthritis & Rheumatism*, *38*, 590-600.

Gregg, E., Cauley, J. A., & Seeley, D. G. (1998) Physical activity and osteoporotic fracture risk in older women. *Annals of Internal Medicine*, *129*, 81-88.

Greenspan, S. L. (1994). Fall severity and bone mineral density as risk factor for hip fracture in ambulatory elderly. *The Journal of the American Medical Association*, *271*, 128-133.

Hoidrup, S., Sorensen, T. I., Stroger, U., Lauritzen, J. B., Schroll, M., & Gronbaek, M. (2001) Leisure-time physical activity levels and changes in relation to risk of hip fracture in men and women. *American Journal of Epidemiology*, *154*, 60-68.

Kristal, D. A., Karen, E. C., & Kevin, S. S. (2003). Osteoporosis knowledge, beliefs and practices among adolescent females. *Journal of Adolescent Health*, *36*, 305-312.

Lau, E. M., Suriwongpaisal, P., Lee, J. K., Das, D. S., Festin, M. R., Saw, S. M., et al. (2001). Risk factors for hip fracture in asian men and women: The Asian osteoporosis study. *Journal of Bone Mineral Research*, *16*, 572-580.

Lorig, K., Konkol, L., & Gonzalez, V. (1987). Arthritis patient education: a review of literature. *Patient Education and Counseling*, *10*, 207-252.

Rubin, S. M., & Cummings, S. R. (1992). Results of bone densitometry affect women's decisions about taking measures to prevent fractures. *Annals of Internal Medicine*, *116*, 990-995.