

Osteoporosis-related life habits and knowledge about osteoporosis among women in Tabriz, Iran

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ABSTRACT

Introduction: The objectives of this study were to investigate the calcium intake, physical activity level and knowledge about osteoporosis in women who attended health centers in Tabriz, Iran. **Materials and Methods:** Three hundred ninety-nine women of childbearing age were studied. Information was collected through face to face interviews with subjects. **Results:** The mean daily calcium intake was 689.08±393.15 mg. Majority of subjects had low or moderate physical activity levels. Only 8% of women reported high physical activity level. Knowledge about osteoporosis in majority of subjects (63.2%) was at moderate level. Educational status of subjects was positively correlated with calcium intake. There were no significant statistics relationship between calcium intake and physical activity with other studied variables. **Conclusion:** Public health programs are suggested to improve calcium intake of women and elevating healthy life styles. Establishment of educational workshops to health care providers and encourage and obligate them to proper consultation with women is suggested as a suitable approach for prevention of osteoporosis.

KEYWORDS: Osteoporosis, Calcium intake, Physical activity, Knowledge, women

INTRODUCTION

Osteoporosis is a systemic metabolic disease resulting in low bone mass, and deterioration of bone structure, which increases the risk for fracture.¹⁻⁴ It is more prevalent among women than among men.³ Some risk factors for osteoporosis include female sex, Caucasian or Asiatic race, advancing age, family history of osteoporosis or fragility fractures, sedentary life style, menopause before age 45 years, prolonged lactation, diet low in calcium and vitamin D.^{3,5}

Worldwide variation in the incidence and prevalence of osteoporosis is difficult to determine because of problems with definition and diagnosis. The most useful way of comparing osteoporosis prevalence between populations is to use fracture rates in older people. However, because osteoporosis is usually not life-threatening, quantitative data from developing countries are scarce. The prevalence of osteoporosis in less developed and developing countries is not clear, as there are few studies in these populations. However, ethnic differences in BMD are well known. Blacks have greater BMD than Caucasians. Hispanics are similar to Caucasians, while Asians have the lowest BMD.⁵

The real incidence of osteoporotic fractures in Iran might be underestimated because of poor health records in our country. However, The results of one study on 553 subjects (34% men, 66% women) aged 20-69 years, randomly selected from 50 blocks in Tehran (the capital of Iran), indicated that the prevalence of osteoporosis of the lumbar spine and femur was 32.4% and 5.9% in women and 9.4% and 3.1% in men respectively.⁶

The first step in the prevention of osteoporosis in women should be making them aware of the risk factors.^{7,8} There is evidence suggesting that osteoporosis knowledge is one contributor to osteoporosis preventive behavior, though this is not a clear-cut relationship.⁹ Some studies on women of different countries indicated that knowledge about osteoporosis risk factors is limited, irrespective of age.¹⁰⁻¹⁶ Healthy life styles in child bearing age women may protect them against osteoporosis in later life. Bearing in mind the lack of reliable epidemiological data about this disease in our country, the present study aims to investigate osteoporosis-related life habits (including calcium intake and exercise) and knowledge about osteoporosis among women of childbearing age in Tabriz, the capital of Azerbaijan province in the northwest of Iran.

MATERIALS AND METHODS

This cross-sectional study was performed on 399 healthy non-lactating, non-pregnant childbearing age women aged 15-49 years. The ethical committee of Tabriz University of Medical Sciences approved the study protocol. Fifteen health centers (30 % of total

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health centers) were randomly selected and healthy childbearing age women who attended these health centers during 3 months of study were included. Informed oral consent was obtained from all subjects. Information about general characteristics of women was gathered by interviewing the subjects and physical activity level was obtained by international physical activity questionnaire: IPAQ.¹⁷ Daily calcium intake was assessed by 24-hour recall method.¹⁸ Knowledge about osteoporosis prevention and risk factors was assessed by questionnaire which consisted of 21 items. The questions were set according to previous studies on osteoporosis.^{3,10} Each question had one correct answer. The total score of the questionnaire was 21; equal to 100%. The score under 50%, between 50-75%, and >75 were classified as low, moderate and high knowledge level; respectively.

Data were analyzed with SPSS for windows version 11.5. The FP II (food processor II) software was used for analyzing diet questionnaires. Mean and frequency of variables were determined. Pearson correlation coefficient and Spearman correlation coefficient used for assessing correlation between variables having normal and non-normal distribution, respectively. Results considered significant, if $p < 0.05$.

RESULTS

The participant characteristics are shown in Table I. The mean age of studied women was 33.13 years. Majority of subjects had educational level at grade 8 or less. Calcium and vitamin D supplements were consumed by 11.8% and 6.3% of subjects, respectively.

Table I. Characteristics of participants (n = 399)

Characteristics	Mean (SD) or %
Age	33.13 (7.51)
Education level %	
Illiterate	9.3
Grade 5 or less	24.6
Grade 8	22.8
Completed grade 12	35.8
University or other tertiary institution	7.5
Calcium supplement users %	11.8
Vitamin D supplement users %	6.3

Table II summarizes distribution of subjects based on daily calcium intake, weekly physical activity, and knowledge level. Most subjects (50.7%) had low calcium intake [less than 600 mg/day which is 60% of the recommended daily intake (DRI), 1000mg/day].¹⁹ Level of physical activity was moderate or low in majority of women, (42.6%, and 37.8%, respectively), and 19.6% had physical activity at high level. The mean

of total scores of knowledge regarding osteoporosis were 12.14 ± 2.98 . Most interviewed subjects (63.2 %) had moderate knowledge about osteoporosis regarding the concept of the disorder and its risk factors, sex-related factors and prevention behaviors.

Table II. Distribution of subjects based on calcium intake, physical activity and knowledge levels

Calcium (mg/day)		Physical activity (METs/min/week)		Knowledge	
n	%	n	%	n	%
Low	202 (50.7)	Low	151 (37.8)	Low	115 (28.8)
Moderate	131 (32.8)	Moderate	170 (42.6)	Moderate	252 (63.2)
High	66 (16.5)	High	78 (19.6)	High	32 (8)
Mean (SD)	689.08 (393.15)	Mean (SD)	1758.9 (225.69)	Mean (SD)	12.14 (2.98)

There were positive significant correlation between calcium intake and educational levels of women (Spearman correlation coefficient; $r = 0.02$, $p < 0.001$). No significant relationship was found between calcium intake and physical activity with other studied variables such as age and knowledge level (data are not shown).

DISCUSSION

Osteoporosis has recently been recognized as a major public health problem by some governments and health care providers.²⁰ Prevention is the most cost-effective means of managing osteoporosis.⁷ Two important preventive habits are diet or supplements containing adequate levels of calcium and vitamin D, and weight-bearing exercise (e.g. going up and down stairs, jogging, aerobic, and isometrics; at least 30 minutes daily).^{13,15,21-23}

Our findings (Table II) indicate that, most women interviewed (50.4%) had a daily calcium intake of less than 60% of the recommended level, and calcium or vitamin D supplements were not consumed by majority of subjects, thus increasing the risk of osteoporosis. Studies on women of other countries such as Caucasian and African-American and Hispanic women in the US, and Asian and Caucasian women in Australia, have shown that most of these women did not fulfill the suggested calcium intake.^{11,12,24} Similarly, non adequate calcium intakes in women have been reported in other studies.^{3,12,24-28} The finding of positive significant correlation between calcium intake and educational levels of women indicates that higher educational level may be associated with healthier diet. Higher educational level may be related to high-

er income, and therefore choosing better sources of calcium such as milk and milk products. Thus, women with low educational level are at risk of osteoporosis more than others, and so more attention should be focused on elevating women's literacy in our country.

Optimal physical activities are necessary for increasing bone mass and thus perhaps reducing the risk of osteoporosis. According to our findings, majority of subjects had physical level at moderate or low levels. Other studies also reported that few women performed sufficient high-intensity weight bearing physical activity to improve bone mass.^{3,7,25,27}

Based on our results (Table II), many women had moderate knowledge about osteoporosis risk factors and preventive behaviors. This knowledge often does not translate to appropriate changes in healthy life habits as it is shown through no significant association between total knowledge scores and calcium intake or physical activity level. Low or moderate levels of knowledge about this disease in women of other countries are also reported by some studies.^{3,15,29} It seems that osteoporosis knowledge is not well internalized among studied women.

As a conclusion, most studied childbearing age women do not achieve the DRI for calcium. Physical activity and knowledge levels about osteoporosis are not sufficient in studied women. Public health strategies should be aimed at improving the calcium intake of women in this age group, and to make appreciated lifestyle changes such as elevating weight bearing physical activity. Educational programs are suggested to encourage primary health care providers to consult with women more effectively about osteoporosis preventions.

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