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Investigation of the Relationship between Osteoporosis and Sexual Satisfaction in Women

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Abstract

Background: As clinical observations have shown, osteoporotic women were complaining of lack of sexual satisfaction and are more prone to depression. Hence, we decided to find the statistical direct relationship between these two factors.

Methods: The case group included 53 menopause women (21 with osteoporosis and 32 with osteopena) and 53 premenopausal women (37 osteoporotic, and 16 osteopenic). In the control group, there were 53 menopause women, and 53 premenopausal women who had normal bone density. Sexual satisfaction in both groups of case and control was assessed by standard Larson's sexual satisfaction questionnaire and bone density was investigated by Dual-energy x-ray absorptiometry (DEXA), in Chamran Hospital bone mass densitometry center.

Results: The menopause women had significantly less sexual satisfaction in comparison with non-menopause ones. Osteoporotic women showed significantly less sexual satisfaction that means that the main effect of osteoporosis and menopause is significant. Osteoporotic women reported significantly less sexual satisfaction in comparison with the two groups of healthy women and osteopenic women (Scheffe test). Osteopenic women also had less sexual satisfaction in comparison with healthy women.

Conclusion: This study suggests that there is a relationship between bone loss and sexual satisfaction in both groups of women. Therefore, this correlation suggests the importance and necessity of quick diagnostic investigation and the management of osteoporosis in women with sexual dissatisfaction.

Keywords: Osteoporosis; Sexual satisfaction; Menopause; Osteopenia; Premenopausal; Bone density

Introduction

Osteoporosis is the most common metabolic disease in western societies.[1] This disease is defined by reduced bone density and the increased risk of fracture.[2,3] Women are more predisposed to osteoporosis and its consequences.[4,5] On the other hand, sexual disorders are also more common in women (40-60%).[6] Sexual satisfaction is defined as an effective response arising from one's personal evaluation of positive and negative aspects in sexual relationships.[7] Both mentioned elements, osteoporosis and sexual satisfaction, are considered as important factors in the quality of life.[1,6] As clinical observations have showed, osteoporotic women were complaining of lack of sexual satisfaction as well. Previous studies indicated that women with sexual dissatisfaction were more prone to depression.[8] Other investigations also show that there is a relationship between depression and osteoporosis.[9] If there is a correlation between osteoporosis and sexual satisfaction, we can refer the women who are complaining of sexual dissatisfaction for osteoporosis investigation and treatment as soon as possible to improve the quality of their life. Hence, we decided to find statistical direct relationship between these two factors.

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Materials and Methods

The case group included 53 menopause women (21 osteoporotic and 32 osteopenic) with the average age

of 53.1±8.5 and 51.8±7.9 years, respectively and 53 premenopausal women (37 osteoporotic, and 16 osteopenic) with the average age of 38.1±5.8 and 40.2±6.4 years. In the control group, there were 53 menopause women, and 53 premenopausal women who had normal bone density (Table 1). Both case and control groups were in the age range of 30-60 years. There was no history of physical or psychological disease or any medication that would affect sexual satisfaction. Also, both groups had at least elementary education.

For the estimation of required sample volume, we had to perform a pilot study first. The sample volume was estimated on the basis of the formula $N=2\frac{(Z_{\alpha/2}+Z_{1-\beta})^2\sigma^2}{d^2}$,

Supposing that d=6 (average difference of case and control groups) σ =11, 1-β= 0.08, α=0.05, according to the pilot study, the sample volume consisted of 53 individuals in each group.

Data collection was done by a standard Larson's sexual satisfaction questionnaire.[10] In the pilot study, the reliability of the questionnaire was estimated on the basis of α - Cronbach, which showed a satisfactory reliability. It must be mentioned that this questionnaire had an acceptable validity in Iran and had been standardized in Iran.[11] In the questionnaire, the test has 25 items which are designed as spectrum. The first item is "always" which is scored 5 and the last oneis "never" which is scored 1. All the candidates signed the informed consent form for participation in the research and all the information was secret. Information about bone density was obtained by a densitometery center. This research was approved by the "Local Research Ethics Committee" of Shiraz University of Medical Sciences. Diagnosis of osteoporosis is defined as a decrease of bone density more than 2.5 SD below the average of healthy young adult scales"(Tscore <2.5).[2] In the present research, the effects of independent variables (menopause and bone density) were studied. In order to analyze the results, we used two way analysis of variance. Menopause as a variable consisted of 2 levels of menopause women and premenopausal women and bone density as tanother variable had 3 levels of osteoporosis, osteopenia and normal bone density.

The data were analyzed by descriptive statistical methods, analysis of variance and Scheffe test. *P* value less than 0.05 was considered significant.

Results

The effects of menopause and bone density were shown in Table 2. The results showed that the main effect of both variables was significant (menopause $p<0.001$, osteoporosis $p<0.001$). The first result of the present research as shown in Table 2 was that menopause women had significantly less sexual satisfaction in comparison with non-menopause ones. T determine the difference among 3 levels of bone density (osteoporosis, osteopenia and normal bone density), Scheffe test was used. The result showed that osteoporotic women had significantly less sexual satisfaction in comparison with osteopenic ones ($p<0.002$) and healthy women ($p<0.001$). Also, osteopenic women had less sexual satisfaction in comparison with healthy ones ($p<0.016$).

Discussion

This study suggests that osteoporotic women in both groups of menopause and premenopause have less sexual satisfaction compared with non -osteoporotic ones.

To our knowledge, there isn't any research which has directly investigated the relationship of these two factors, but we can indirectly use the previous researches to find out the relationship between these

Table 1: Mean and standard deviation (SD) of age

	Bone density	No.	Mean	SD
Menopause	Osteoporosis	21	53.1	8.5
	Osteopenia	32	51.8	7.9
	Normal	53	50.9	7.8
	Total	106	51.60	8.1
Premenopausal	Osteoporosis	16	40.2	6.4
	Osteopenia	37	38.1	5.8
	Normal	53	39.0	6.0
	Total	106	38.86	6.1

Table 2: Mean and standard deviation (SD) of sexual satisfaction questionnaire scores

	Bone density	Number	Mean sexual satisfaction score	SD
Menopaused women	Osteoporosis	21	72.00	10.26
	Osteopenia	32	78.34	14.12
	Normal	53	82.66	12.50
	Total	106	79.24	13.15
Premenopausal women	Osteoporosis	16	85.31	10.24
	Osteopenia	37	92.05	9.62
	Normal	53	98.54	7.99
	Total	106	94.28	10.08
Total	Osteoporosis	37	77.75	12.12
	Osteopenia	69	85.69	13.69
	Normal	106	90.60	13.14
	Total	212	86.76	13.90

two factors and suggest some hypotheses. These studies have shown that there is a relationship between sexual dissatisfaction and mood disorders,[12] i.e. the women who have less sexual satisfaction are more prone to mood disorders such as depression.[8] In the other studies, a relationship has been found between depression and reduced bone density,[9] and some investigations have considered depression as a major risk factor for osteoporosis. Although the cause of the relationship between depression and osteoporosis is not known,[13] most of the studies have confirmed that there is an association between the level of active vitamin D in the blood and depression.[14-16] So, we can suggest that sexual dissatisfaction increases the risk of osteoporosis by causing depression.

From the previous studies, it is also concluded that there is a relationship between depression and poor nutrition,[17] as depressed individuals are usually suffering from changing nutrition behaviors.[18] On the other hand, proper nutrition like receiving calcium, vegetables and fruits decreases the risk of osteoporosis.[19-21] Therefore, it may be possible to suppose that osteoporosis in women suffering from sexual dissatisfaction could be the result of lack of proper nutrition.

Based on previous studies, there is a relationship between depression and physical activity.[22] Physical activity is associated with decreased prevalence of depression[23] and as physical activity is an important factor in increasing and maintaining bone density,[21,24] we may suggest that osteoporosis in women with sexual dissatisfaction is the result of the lack of physical activity. Also, menopause women had less sexual satisfaction as compared with other women. Probably, the reduction of sexual hormone in menopause causes sexual dysfunction.[25] Osteoporosis screening tools to accurately identify postmenopausal women likely to have low bone mineral density and the treatment of this group are of great importance in this relation.[26,27]

This study suggests that there may be an association between osteoporosis and sexual dissatisfaction. Therefore, the importance and necessity of quick diagnostic investigation and management of possible osteoporosis in women with sexual dissatisfaction are warranted.

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References

1 **1** Gurney S , Simmonds J. Osteoporosis, a teenage perspective. *Physiotherapy* 2007;**3**:267-72. [doi: 10.1016/j.physio.2006.12.004]

2 Bianchi ML. Osteoporosis in children and adolescents. Bone 2007; **41**:486-95. [17706477] [doi:10.1016/j.bone.2007.07.008]

3 Shokrollahi P, Abtan M, Najafi ZH, Rivaz M. Management of osteoporosis in Postmenopausal women in Shiraz, southern Iran. *Iran Red*

Crescent Med J 2009;**11**:222-23.

4 Shokrollahi P, Rivaz M, Robatjaze M. Prevalence of risk factors of osteoporosis in post-menopausal women in Shiraz, Southern Iran. *Iran Red Crescent Med J* 2008; **10**:190-93.

5 Mottaghi P, Karimifar M, Salesi m, Mehrabi A. Osteoporosis screening tool in Iranian postmenopausal women. *Iran Red Crescent Med J* 2010;**12**:122-6.

6 Steinke EE, Wright DW. The role of sexual satisfaction, age, and cardiac Risk factors in the reduction of post MI anxiety. *Eur J Cardiovasc Nurs* 2006;**5**:190-6. [16442845] [doi: 10.1016/j.ejcnurse.2005.12.002]

7 Auslander BA, Rosenthal SL, Fortenberry JD, Biro FM, Bernstein DI, Zimet GD. Predictors of sexual satisfaction in an adolescent and college population . *J Pediatr Adolesc Gynecol* 2007;**20**:25-8. [17289513] [doi:10.1016/j.jpag.2006.10.006]

8 Kim JH. Relationship among sexual knowledge, frequency, satisfaction, marital intimacy and level of depression in stroke survivors and level of depression in stroke survivors and their spouses. *Taehan kanho Hakhoechi* 2008;**38**:483-491. [18604158] [doi:10.4040/jkan.2008.38.3.483]

9 Mezuk B. Eaton WW, Goldon SH. Depression and osteoporosis: epidemiology and potential mediating pathway. *Osteoporos Int* 2008;**19**:1-12. [17763997] [doi:10.1007/s00198-007-0449-2]

10 Larson JH, Auderson SM, Holman TB, Niemann BK. A longitudinal study of the effects of premarital communication, relationship stability, and self- stem on sexual satisfaction in the first year of marriage. *J Sex Marital Ther* 1998;**24**:193-206. [doi:10.1080/00926239808404933]

11 Bahraim N, satar zadeh N, Ranjbar, F, Ghocha Zade M. Investigation of relationship between sexual satisfaction and depression in fertile and unfertile couples. Faslname Barvari Nabarvari 1386;52-9. [In Persian]

12 Zieba A, Jawor M, Dudek D. Sexual functioning of patients with major depression. Pilot study. *Psychiatr Pol* 2000;**34**:543-50. [11059255]

13 Yirmiya R, Goshen I, Bajayo A, Kreisel T, Feldman S, Tam J, Trembovler V, Csernus V, Shohami E, Bab I. Depression induces bone loss through stimulation of the sympathetic nervous system. *Proc Natl Acad Sci U S A* 2006;**103**:16876-81. [17075068] [doi:10.1073/pnas.0604234103]

14 Berk M, Sanders KM, Pasco JA, Jacka FN, Williams LJ, Hayles AL, Dodd S. Vitamin D deficiency may play a role in depression. *Med Hypotheses* 2007;**69**:1316-9. [17499448] [doi:10.1016/j.mehy.2007.04.001]

15 Hoogendijk WJ, Lips P, Dik MG, Deeg DJ, Beekman AT, Penninx BW. Depression is associated with decreased 25- hydroxyvitamin D and increased parathyroid hormone levels in older adults. *Arch Gen Psychiatry* 2008;**65**:508-12. [18458202] [doi:10.1001/archpsyc.65.5.508]

16 Jorde R, Sneve M, Figenschau Y, Svartberg J, Waterloo K. Effects of vitamin D supplementation on symptoms of depression in overweight and obese subjects: randomized double blind trial. *J Intern Med* 2008;**264**:599-609. [18793245] [doi: 10.1111/j.1365-2796.2008.02008.x]

17 Schanze A, Reulbach U, Scheuchenzuber M, Groschl M, Kornhuber J, Kraus T. Ghrelin and eating disturbances in psychiatric disorders. *Neuropsychobiology* 2008;**57**:126-30. [18552514] [doi:10.1159/000138915]

18 Park YH, Suh EE. The risk of malnutrition, depression, and the perceived health status of older adults. *Taehan Kanho Hakhoe Chi* 2007; **37**:941-8. [17992066]

19 Prynne CJ, Mishra GD, O'Connell MA, Muniz G, Laskey MA, Yan L, Prentice A, Ginty F. Fruit and vegetable intakes and bone mineral status: a cross sectional study in 5 age and sex cohorts. *Am J Clin Nutr* 2006;**83**:1420-8. [16789345]

20 Rizzoli R. Nutrition: its role in bone health. *Best Pract Res Clin Endocrinol Metab* 2008;**22**:813-29. [19028358] [doi:10.1016/j.beem.2008.08.005]

21 Shokrollahi P, Rivaz M, Robatjaze M. Prevalence of risk factors of osteoporosis in post-menopausal women in Shiraz, southern Iran. *Iran Red Crescent Med J* 2008;**10**:190-3.

22 Teychenne M, Ball K, Salmon J. Associations between physical activity and depressive symptoms in women. *Int J Behav Nutr Phys Act* 2008;**5**:27. [18460191] [doi:10.1186/1479-5868-5-27]

23 McKercher CM, Schmidt MD, Sanderson KA, Patton GC, Dwyer T, Venn AJ. Physical Activity and Depression in young Adults. *Am J Prev Med* 2009;**36**:161-4. [19062235] [doi:10.1016/j.amepre.2008.09.036]

24 Koihe T. Evaloation of exercise as a preventive Therapy for osteoporosis. *Clin Calcium* 2005;**15**:673-7. [15802783]

25 Nappi Rf, wawrak, Schmitt S. Hypoactive Sexual desire disorder in post menopausal women. *Gynecol Endocrinol* 2006;**22**:318-23.

26 Mottaghi P, Karimifar M, Salesi M, Mehrabi A. Osteoporosis screening tools in Iranian postmenopausal women. *Iran Red Crescent Med J* 2010;**12**:122-126.

27 Saadati N, Rajabian R. The effect of bisphosphonate on prevention of glucocorticoid-induced osteoporosis. *Iran Red Crescent Med J* 2008;**10**:8-11.