

"A SURVEY ON OSTEOPOROSIS IN POSTMENOPAUSAL WOMEN IN BATHINDA REGION"

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Received: March 17, 2020

Accepted: April 25, 2020

ABSTRACT: Postmenopausal osteoporosis generally develops after menopause, when estrogen levels drop precipitously. These changes lead to bone loss, usually in the trabecular (spongy) bone inside the hard cortical bone. Osteoporosis is a multi factorial and slowly emerging global health problem. The lifetime risk of dying from hip fracture is same as that from breast cancer. A decrease in BMD is associated with an increased risk of fractures. WHO defines natural menopause as at least 12 consecutive months of amenorrhea not due to physiologic and pathologic causes. Menopause is a natural physiological phenomenon resulting from primary ovarian failure secondary to apoptosis or programmed cell death. Ovarian function declines with age. The onset of menopause features the decreasing production of estradiol, as well as increasing levels of FSH. During the menopausal transition period, women will experience a number of bothersome symptoms, such as hot flashes, night sweats, vaginal atrophy and dryness, dyspareunia, sleep disturbance, and mood swings. Since low estrogen levels are the main cause of postmenopausal osteoporosis, menopause hormone therapy is considered as the first line choice for prevention of osteoporosis and its effectiveness has been demonstrated by various studies. However, HT is recommended for women who are less than 60 years old and/or less than 10 years post-menopausal. For those who are greater than 60 years old and / or greater than 10 years postmenopausal, menopause hormone therapy is not appropriate and other medicines should be considered.

Key Words: FSH (follicle-stimulating hormone), WHO (World Health Organization), HT (Hormone therapy), BMD (Bone mineral density).

1. INTRODUCTION:

Osteoporosis is the most common skeletal disorder and it affecting postmenopausal women. It is characterized by decrease in bone mass resulting in fragility fractures. It is estimated that, the one-third of adult women will have an osteoporosis-related fracture in their lifetime. (Bolland MJ.et.al, 2010) Osteoporosis-related fractures typically involve the spine, hip, humerus and forearm. Colles' (forearm) fractures are more common in younger postmenopausal women while hip fractures peak in the seventh to eighth decade of life. Most vertebral fractures are asymptomatic. However, they can cause back pain, height loss. Vertebral deformities may result in decreased lung capacity, impaired balance and gastrointestinal symptoms. The consequences of a hip fracture are often debilitating. It is estimated that 50% of patients with a hip fracture will no longer be able to live independently and 20% will die in the year following the fracture. (Ford N.et.al, 2016) Therefore, various organizations have recommended screening strategies to identify those at high risk of osteoporotic fractures (Bolland MJ 2010; Burge R 2007; Wisnowski LE; Ford N 2016; Kumar KS2012).

Risk factor assessments and bone mineral density (BMD) measurements can identify patients at risk of osteoporotic fractures. A decrease in bone density is associated with an increased risk of fractures. In general, bone mass increases during childhood and adolescence to reach a peak level by the third decade of life. Subsequently, a steady rate of decline is noted with age in both sexes. In women, the decline of estrogen at menopause leads to increased bone resorption and a rapid decline in bone density in the early postmenopausal years.(Watts NB.et.al; Schnatz PF.et.al,2011) Furthermore, certain lifestyle factors, medical conditions and medications can also impact peak bone mass, rate of bone loss and fracture risk. Since pharmacological treatments can substantially reduce fracture rates, identifying high-risk individuals is the cornerstone of osteoporosis management.

Osteoporosis is due to lower-than-normal [maximum bone mass](#) and greater-than- normal bone loss. Bone loss increases after [menopause](#) due to lower levels of [estrogen](#).(Berg KM.et.al,2008)Osteoporosis may also occur due to a number of diseases or treatments, including [alcoholism](#), [anorexia](#), [hyperthyroidism](#), [kidney disease](#), and also [surgical removal of the ovaries](#).(Nieves JW,2005) Certain medications increase the

rate of bone loss, including some [anti seizure medications](#), [chemotherapy](#), [proton pump inhibitors](#), [selective serotonin reuptake inhibitors](#), and [glucocorticosteroids](#).(Lips P.et.al,2010) [Smoking](#) and the too little [exercise](#) are also risk factors.(Wong PK.et.al,2007) Osteoporosis is defined as a [bone density](#) of 2.5 [standard deviations](#) below.(Ilich JZ.et.al,2000) This is typically measured by [dual-energy X-ray absorptiometry](#).(WeissLA.et.al,2005).

Risk factor of osteoporosis in postmenopausal woman :

Fractures

Previous fragility fracture

Family history

Heredity is the greatest influence on peak bone mass: history of fracture in a first- degree relative can double fracture risk.

Body habits

Low weight (commonly approximated as <57 kg), recent weight loss of 4.5 kg or more, kyphosis

Hormones

Delayed menarche (>15 years of age), early menopause (estrogen deficiency before 45 years), other causes of hypoestrogenism

Lifestyle factors

Cigarette smoking, poor nutrition, heavy alcohol consumption (3 or more units of alcohol per day), insufficient physical activity

Risk factors for falls

Inadequate lighting, loose rugs, poor vision, orthostatic hypotension, weak muscles, problems with balance.

General recommendations

- Life style changes
- Calcium and vitamin D

General Food Supplements which should take by post menopausal women:

- ☐ Dairy products
- ☐ Fish
- ☐ Nuts
- ☐ Fruit
- ☐ Miscellaneous

Calcium-fortified foods Tofu

Estimating calcium intake: Total calcium intake + 250 mg from a general non-dairy

Diet = total daily calcium intake. Note: 1 serving of dairy = ~300 mg calcium

Prevention:

Prevention of low bone density can start early in the life by maximizing peak bone density. Once a person loses their bone density, the loss is usually irreversible, so prevention (greater than normal) of bone loss is important(Costa-Paiva L.et.al,2003) Actions to maximize the bone density and stabilize loss of bones include:

Exercise, especially weight-bearing exercise and resistance exercises

• Sufficient calcium in diet: older adults may have increased calcium needs—ofnote, Medical conditions such as hyperthyroidism can affect absorption of calcium(Berg KM.et.al,2008)

• [Estrogenreplacement](#)

• Avoidance of steroidmedications

• Limit alcohol use and smoking. Hormone Replacementtherapy

ET/HT can still be considered a first line choice for prevention of bone loss and fracture in the early postmenopausal period for a period of 5 years. In women with a low risk of adverse events classically associated with HT/ET newer analyses show that treatment can be continued with an acceptable risk benefit ratio.

For many years the mainstay of prevention of postmenopausal bone loss was hormone therapy estrogen + progestin (HT) or estrogen therapy (ET). Years from menopause has one of the largest effects on the rate of bone loss because the bone resorption is highest in the first 3-4 years after menopause. Response to treatment is always highest during this time because stopping resorption causes rapid filling in of the resorption or remodeling space and the higher the bone resorption, the greater the increase in BMD. The

most effective way to treat bone loss in postmenopausal women is by using a high dose of HT/ET for 6 months to rapidly reduce bone resorption and then reduce the dose one level lower for the subsequent years. HT and ET were commonly used in the last 30 years but their use declined following publication of the Women’s Health Initiative (WHI) study in 2002. (Sandhu SK.et.al,2011) However, the average age of the women in WHI study was 63 and few of them only have had menopausal symptoms. This WHI results might not apply for early post-menopausal group. In a recent analysis of hysterectomized women it was shown that avoiding estrogen has led to ~50,000 extra deaths from 2002-20113. In a review article(Nieves JW,2005)of oral estradiol and didrogestosterone combination, it was concluded that the combination is very effective in relieving menopausal symptoms and prevention of osteoporosis while maintaining a good safety profile. In a meta-analysis of 57 trials (about 10,000 women), on an average the increase in BMD after 2 years was 6.8 % in the spine and 4.1 % in the hip in estradiol/conjugated estrogens treated group and no difference was noted in results between prevention and treatment trial. (Golob AL.et.al,2015)Since 2002 there have been more than the 10 double blind trials lasting 2-3 years and were mainly using hormone therapy. The results from these trials are very similar to those reported in a meta-analysis.(Costa-Paiva L.et.al,2003).

2. MATERIAL AND METHODS

INCLUSION AND EXCLUSION CRITERIA

- ❖ Study design: Cross-sectional study
- ❖ Study Period: Three months
- ❖ Source of Data: Data will be collected from out-patient of Adesh hospital ,Bathinda.

▢ **INCLUSION CRITERIA**

- ✓ Women age above 45.
- ✓ Post- menopausal women.
- ✓ Patients who are willing to participate.

▢ **EXCLUSION CRITERIA**

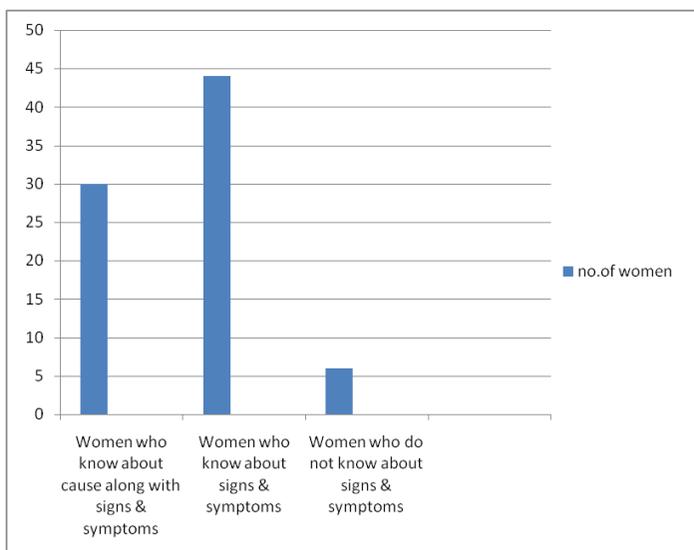
- ✓ Patients who are not willing to participate.
- ✓ Study site: Adesh Hospital, Bathinda
- ✓ Sample Size: The sample size will be approximately 50 patients.

3. RESULT & DISCUSSION:

A total of 50 women were participated in our study in which women were classified as:

On the basis of knowledge about osteoporosis:-

Sr.no.	Knowledge About Osteoporosis	No. of Women
1.	Women who know about cause along with signs & symptoms	30
2.	Women who know about signs & symptoms	44
3.	Women who do not know about signs & symptoms	06



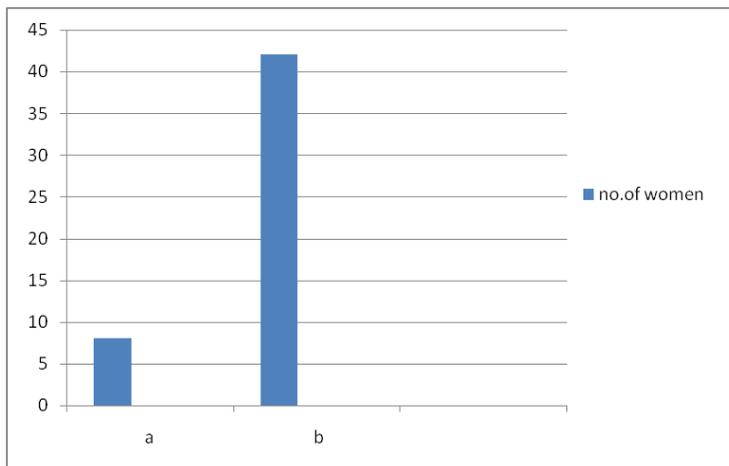
KNOWLEDGE ABOUT OSTEOPOROSIS

30 women had knowledge about causes and symptoms (as they were attending orthopedic department and taking treatment of osteoporosis) while 44 of them had awareness only about signs and symptoms, 6 of them had no awareness about any cause or symptom.

On the basis of menstrual cycle:

In this, women were classified on the basis of their menstrual period.

Sr. no.	Information about menstrual cycle	No. of Women
a.	Women who had ever missed her periods for more than 6 months during her menstrual life.	08
b.	Women who had never missed her periods for more than 6 months during her menstrual life.	42



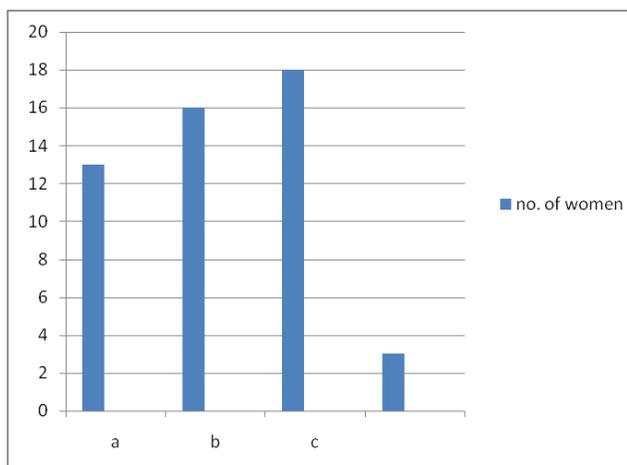
INFORMATION OF MENSTRUAL CYCLE

According to this survey, only about 18% of the women had irregular menstrual periods as they missed their periods more than 6 months in a row outside of pregnancy, but rest of them had never faced this problem.

On the basis of loss of height:

In this parameter evaluation of disease is done on the basis of change in body height of the patient.

Sr.no	Loss of Height	No. of Women
a.	Women who had lost 2 inches of height	13
b.	Women who had lost 1.5 inches of height	16
c.	Women who had lost 1 inche of height	18
d.	Women who had lost no height	03



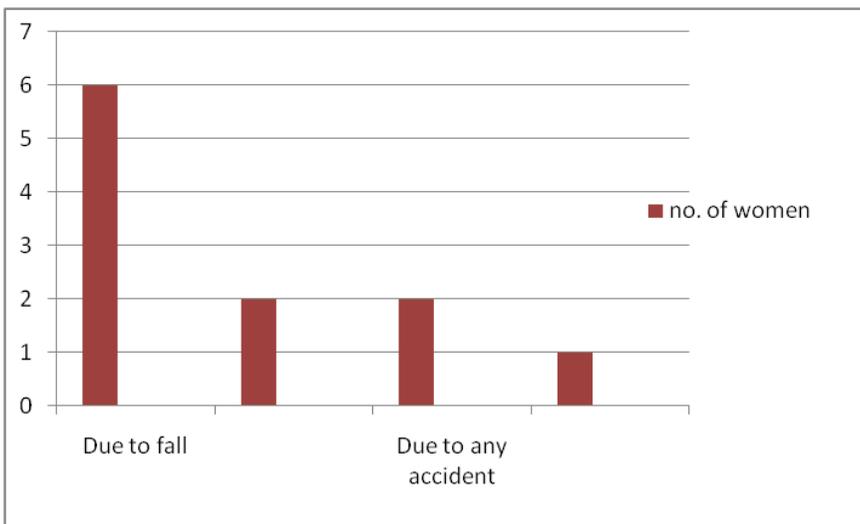
Loss in height

Out of all the women, maximum of them had lost 1 inch of height(18 women) and 16 women had faced a loss of 1.5 inches whereas three had no change in their height but 26% of patients had faced loss of 2 inches (13 women).

On the basis of fractures:

In this part of survey patients were asked about bodily fractures in the past years.

Sr.no	Fracture	Body Part Fractured	No. of Women
a.	Due to fall	Hip	06
		Wrist	02
b.	Due to any accident	Hip	02
		Wrist	01



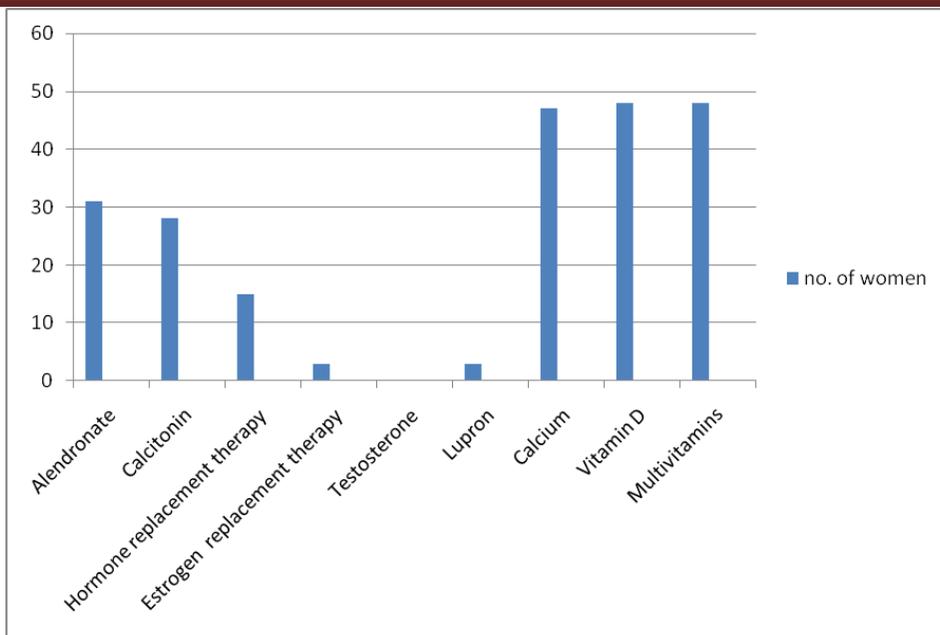
FRACTURES

Maximum number of women had fractures in hip due to fall whereas 4 patients had broken hip, wrist , arm bone due to accidents.

On the basis of treatment and medications given to the patients:

Prescriptions were taken from all the women and evaluation was done.

Medication Used by Women	No. of Women Taking these Women
Alendronate/ fosmax (weekly pill)	31
Calcitonin (nasal spray)	28
Hormone replacement therapy (daily pill)	15
Estrogen replacement therapy (daily pill)	03
Testosterone	00
Lupron	03
Calcium (citrate, carbonate,others)	47
Vitamin D(400-1000 IU)	48
Multivitamins (amount of calcium 1250mg)	48



MEDICATION USED BY WOMEN

Maximum number of women (48 women) involved in osteoporosis survey during their postmenopausal period are taking vitamin d and multivitamins (amount of calcium 1250 mg) as medication for treatment of osteoporosis and 47 women out of 50 are using calcium supplements involving citrates, carbonates. Calcitonin (nasal spray) is used by 28 women while 31 women have alendronate/ fosmax (weekly pill) in their prescription pattern and almost half of them are having hormone replacement therapy (on daily basis) as a treatment for osteoporosis in postmenopausal period. A mere count of women (3 women) are taking estrogen replacement therapy and lupron on daily basis, surprisingly none of them are using testosterone.

4. CONCLUSION:

Osteoporosis is a common and silent disease until it is complicated by fractures that become common. Osteoporosis in postmenopausal women is more related to hormonal aberrations than to lifestyle factors. As hormonal changes during the menopausal transition directly or indirectly adversely affect quality of life, body composition and cardiovascular disease risk, maintenance of health parameters in the premenopausal years is crucial for a healthy post menopause. The menopause is associated with the onset and progression of osteoporosis in women. Estrogen level falls during this period which leads to reduction in calcium absorption and decreases bone mineral density which ultimately causes osteoporosis. Research carried out in bathinda region indicates that maximum number of women know about signs and symptoms of osteoporosis during postmenopausal period and 42 Women are those who had never missed her periods for more than 6 months during her menstrual life and most of them had lost 1 inch of height .It is observed that most commonly used medications used by postmenopausal women are multivitamins, vitamin d and calcium.

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