

**A STUDY ON OSTEOPOROSIS AND IMPACT OF DRUGS & EXERCISE FOR ITS CLINICAL MANAGEMENT**

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**Article Info:** Received 10 January 2020; Accepted 27 February 2020**DOI:** <https://doi.org/10.32553/jbpr.v9i1.724>**Corresponding author:** Indra Kumar Dhoot**Conflict of interest statement:** No conflict of interest**ABSTRACT:**

**Aim:** The purpose of study was “Prevention of an Osteoporosis by development of the intervention of education. To observe the severely affected bones due to rapid decline in BMD.

**Methods:** all the data were collected after the patient counseling by the cross –sectional study in both sexes (n=163), aged 18 to 70 years, at CMHRC Hospital, Churu, India using random sample method. Individuals were classified as they having osteoporosis/ osteopenia characterized using T-Score after the DEXA scanning based on the WHO.

**Result:** It was found that out of 58 patients 6, 24, 16 & 12 patients of them were affected due to “wrong posture”, “Imbalanced diet, mineral & BMI” “Adverse drug reactions” & “Adverse effects of other associated disease”. Subjects with normal or lower BMI were more affected with osteopenia or initial stage of osteopenic fractures, when compared to overweight or obese patients. The sitting, sleeping & standing postures are to be altered while at work as they advance in age or in case of initial stage of osteopenic fractures. All the subjects are advised to follow the Posture related Education, Diet maintenance and required exercise to mimic the initial stage of osteopenia/osteoporosis and prevention of osteoporosis disorder. Significantly lower T-scores were observed at spine with (-)  $2.05 \pm 0.15$  & hip bone with (-)  $2.15 \pm 1.25$  respectively as compare to other bones either in men or women. That concludes that the susceptibility in the both spine and hip bone had rapid decline in the BMD instead of other bones.

**Keywords:** BMD, T-score, Osteoporosis, Calcium supplements, skeletal disease, Osteopenia.

**Introduction**

Osteoporosis is an disorder due to low bone mineral density (BMD) and loss of biochemical & structural properties that are necessary for bone homeostasis. Physicians are well informed about the relation of osteoporosis to secondary causes, including aging, postmenopausal status and chronic diseases or lifestyle issues that promote osteoporosis. Intake of dilatory sources for both male and female either childhood or adolescence is necessary in adequate amount for making healthy & strong bones. Most importantly, however, a good dietary source, intake or taking of Calcium with food or by supplements only, is not adequate for the treatment of osteoporosis.

Osteoporosis is a state of weakened bones, which makes them fragile and more prone to rupture. In generally, it grows very slowly & quietly with a long time and is often difficult to diagnose until a slight fall or a bone fracture due to tiny accident. Osteoporosis is a disorder that is peculiarly due to bone tissue deterioration & low bone mass level, which is responsible for the risk of fracture during minor accidental cases. Known as the “silent

thief”, bone deterioration can occur over a number of years without presenting any symptoms. Generally, fractures like osteoporosis are found in the hip, spine, wrist, and shoulder.<sup>[16]</sup>

**METHODS****Participants:**

A cross –sectional study was carried out in both sexes (n=163), aged 18 to 70 years, and were selected from CMHRC HOSPITAL, CHURU, INDIA using random sample method. The Exclusion Criteria were (1) age < 18 years (2) Pregnancy (3) Evidence of malignancy (4) Neurological Disorder (5) Sexually Transmitted Disease (6) Paralysis. All the subjects who met with criteria were approached for the study as participant. Individuals of age 18-70, both sexes and irrespective of type of fracture were selected for present study. Initial total 163 patients were taken for this study; out of 163 patients 105 patients had discontinued the clinical trial of drugs due to selection criteria. At last a total of 13 men and 45 women were taken as participants.

An independent sample t-test conducted for the sample size of 13 men and 45 women by significant level. (based on the data available as per patient counseling of participants).

#### **Patient Counseling:**

Patient counseling helps to provide information, advice and support to the patients properly using their medicines. According to the USP, drug consultation is an approach that focuses on improving the problem of solving the skills of patients for the purpose of improving the problem or maintaining the quality of health and quality of life. Safe and effective drug therapy depends on patients being well informed about their medication. In this letter an analysis of analytical approach to examine the patient's consultation process, using the data of a hospital pediatric outpatient clinic in the United Kingdom, with special focus on different methods and methods in which these scenes are being established. With those who respond to patients, four types of interactional approaches are identified for negotiation entry in a broadly defined 'Patient Consultation' sequence. The effect on giving these methods, more generally, as well as obtaining advice and information, in this setting is considered in the wider structures of humility, ethics and ability, and are in the light of the continuous development of extended role.

Here we were using a form format for the patient history & Counseling that includes: (1) Patient Information (2) Patient History (3) Patient's symptoms (4) Any serious Injury (5) Any Habits or Addictions (6) Current Medication (7) Mark Chart of Experienced Disorders (8) Osteoporotic Questionnaires (9) Any Sickness or Special condition (10) Family or Genetic Information (11) Status of Menstrual Cycle (12) Symptom Review Chart (13) Calcium & Diet Intake Chart (14) Comments on Diagnosis & Implementation of Advice.

As per the data collected by the patient counseling forms, a calculated summarized table-1 of named "Anamnetic, Anthropometric & Osteological Parameters of participants", was created for the easy consideration and observation of patient's data. All the findings were taken under observation for the result and advice for the bright future.

#### **Prevalence of Low Bone Mass using Posture Related Education & Drug Monitoring:**

As per our aim of the study, impact of drug and exercise are the main parameters for the study. The impact of drugs and exercise are always vary with the continuous

diet & life styles like sitting posture, working postures etc. All the forms were observed for the results and conclusion. As per the requirement of patients, some Posture Related Education (PRE) during the patient counseling also discussed with related disorders for making life easy and effortless lifestyle.

#### **RESULT & DISCUSSION:**

In the present cross-sectional study, in the both sexes men and women; aged 18 to 70 year; we observed a peak prevalence of osteopenia and osteoporosis in postmenopausal women located at spine, hip & some other osteopenic effects on bone. It was found that out of 58 patients 7% were below 50 year male, 19% were below 50 year females, 15% were above 50 year male & 59% were above 50 year females. As per the status of patient's BMI, it was found that out of 58 patients 5 male & 5 females of them were low BMI, 4 male & 20 females of them were normal BMI and rest 4 male & 20 females of them were overweight BMI. As per the location of fractures found in the patients, it was found that out of 58 patients 27 of them were spine fracture, 25 of them were hip bone fracture and 6 of them were other osteoporotic or osteopenic fractures.

As per the data related to the causes that were responsible for the osteoporotic / osteopenic fractures or initial Osteopenic stages, it was found that out of 58 patients 6 of them were affected due to wrong posture, 24 of them were affected due to imbalanced diet, mineral & BMI, 16 of them were affected due to adverse drug reactions and rest 12 of them were due to the adverse effects of other associated disease. According to the implementation of advice, it was found that out of 58 patients, 2% of them were advised to follow PRE & Diet chart, 27% of them were advised to follow PRE, Diet & Exercise, Whereas rest all 71% of them were advised to follow PRE, Diet & Exercise with prescribed drugs and medicine.

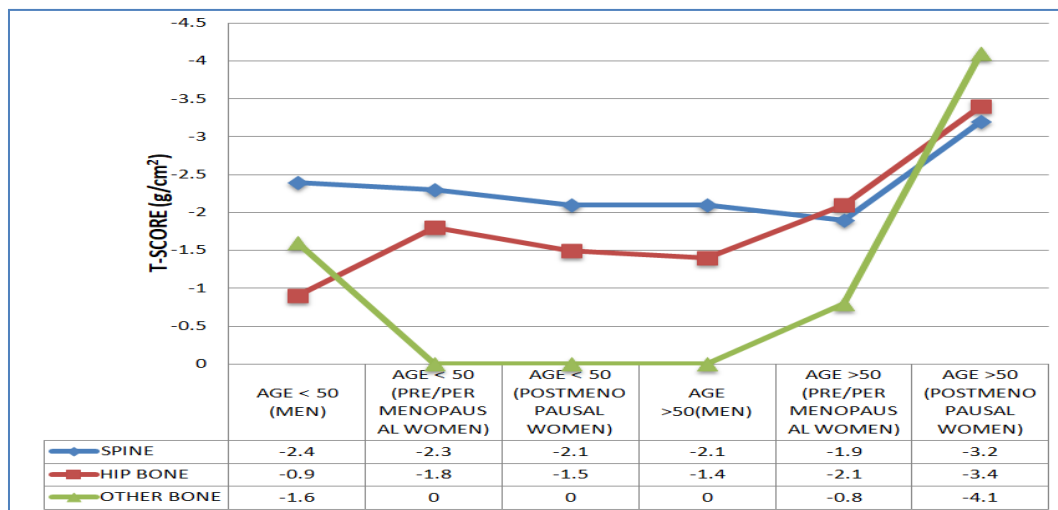
Our finding and observation show that the osteoporosis or osteopenia in spine had almost similar T-score values either men or pre and per menopausal women. Whereas the Postmenopausal women: aged >50 year had severity of the low bone mineral density. In this study we found that the bone mineral density had rapidly declined after the menopause.

This study also shows that the subjects either male or female both had significantly lower T-scores at spine with (-)  $2.05 \pm 0.15$  & hip bone with (-)  $2.15 \pm 1.25$  respectively as compare to other bones either in men or women due to the cancellous bones, having much metabolic activities than the compact bone.

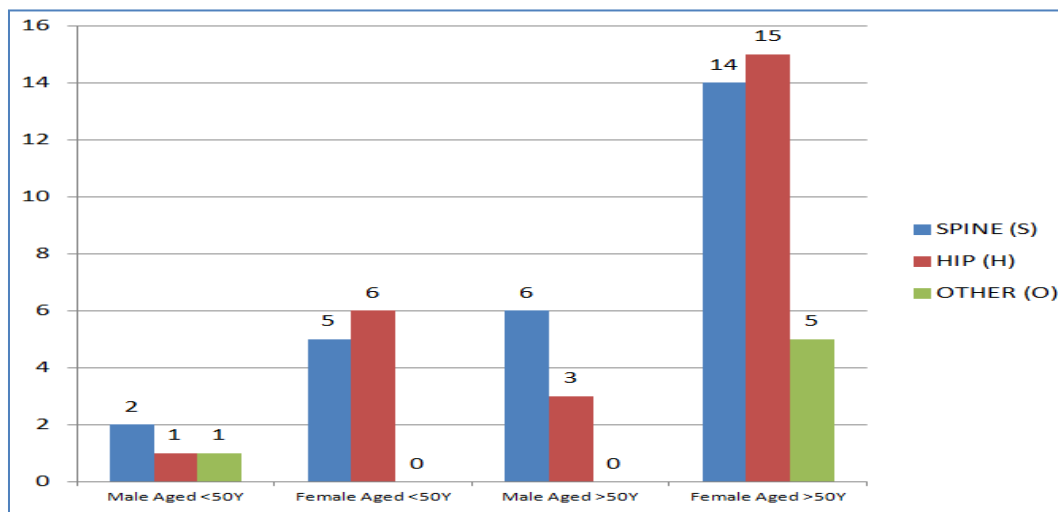
**TABLE: 1 Anamnetic, Anthropometric & Osteological Parameters of participants**

Parameters	Men (n= 13)	Pre or per menopausal (n=13)	Post Menopausal (n=32)
Age (Year)	45 ± 22	38 ± 15	58.5 ± 10.5
Height (cm)	169.5 ± 16.5	157.25 ± 5.75	150.75 ± 6.25
Weight (Kg)	59.5 ± 16.5	53.5 ± 11.5	60.5 ± 19.5
<b>BMI Categories (%)</b>			
Under weight (BMI<18.5)	38.46%	38.46%	6.25%
Normal (18.5-24.9)	30.77%	53.85%	68.75%
Overweight & obese (BMI>25)	30.77%	7.69%	25.00%
<b>Spine BMD (T-SCORE)</b>			
Overall Subjects	(-) 1.3 ± 1.1	(-) 1.35 ± 0.95	(-) 2.05 ± 1.15
Age <50	(-) 1.4 ± 1.0	(-) 1.35 ± 0.95	(-) 2.1 ± 0.0
Age >50	(-) 1.15 ± 0.95	(-) 1.4 ± 0.5	(-) 2.05 ± 1.15
<b>Hip BMD (T-SCORE)</b>			
Overall Subjects	(-) 0.9 ± 0.5	(-) 1.15 ± 0.95	(-) 1.9 ± 1.5
Age <50	(-) 0.9 ± 0.0	(-) 1.8 ± 0	(-) 1.5 ± 0
Age >50	(-) 0.9 ± 0.5	(-) 1.4 ± 0.5	(-) 1.9 ± 1.5
<b>Other BMD (T-SCORE)</b>			
Overall Subjects	(-) 1.6 ± 0.0	(-) 0.8 ± 0.0	(-) 2.25 ± 1.85
Age <50	(-) 1.6 ± 0.0	Nil	Nil
Age >50	Nil	(-) 0.8 ± 0.0	(-) 2.25 ± 1.85

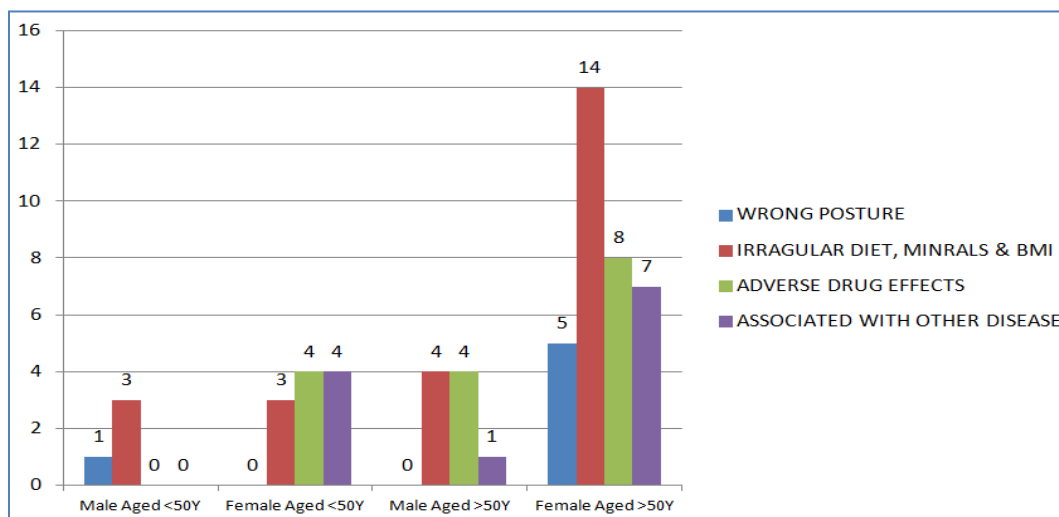
\*All values are mean ± SD except BMI categories (%).



**Figure 1:** Upper confidential of BMD at differ location of bones of participants



**Figure 2:** Status of Fracture Location in Participants



**Figure 3:** Status of Responsible Causes of Disorder

### CONCLUSION:

This study concludes that the susceptibility in the both spine and hip bone had rapid decline in the BMD instead of other bones. As per the advice and implementation of advice, if proper treatment, precautions and management are not taken, subjects would face the complications and threat of osteoporosis. Subjects with normal or lower BMI were more affected with osteopenia or initial stage of osteopenic fractures, when compared to overweight or obese patients. The sitting, sleeping & standing postures are to be altered while at work as they advance in age or in case of initial stage of osteopenic fractures. Subjects affected with osteopenia/osteoporosis fractures due to associated with adverse drug reactions & adverse reactions due to some other disorders like hypoparathyroidism, hyperthyroidism etc, are advised to follow proper treatment of these disorders with continue counseling with related medical practitioner. All the subjects are advised to follow the Posture Related Education (PRE), Diet maintenance and required exercise to mimic the initial stage of osteopenia/osteoporosis and prevention of osteoporosis disorder.

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