

# Vitamin D Status in Young Female Reported with Backache

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## ABSTRACT

**Objective:** To evaluate the Vitamin D status in young females who reported with the complaint of backache. This study was conducted in a private hospital in Karachi from Aug. 2010 to Dec.2011.

**Design of Study:** A descriptive prospective study

**Place and Duration of Study:** This study was conducted in two private hospitals Memon Medical Complex and Mamji Hospital from Aug 2010 to Dec. 2011.

**Materials and Methods:** In this study 113 adults females were taken. The age range between 21-35 with mean age  $27.2 \pm 4.6$  years. They attended the hospital with complaint of backache. The patients were enrolled through a Proforma with an inclusion and exclusion criteria. The Proforma recorded the basic information i.e. age, marital status, pregnancies, occupation, work load, duration of sun exposure, area of skin exposed, veiled, type of residence and dietary habits. The serum vitamin D level and simultaneously the serum calcium, phosphorus and alkaline phosphatase. X-ray Lumbo/Sacral spine and pelvis were taken. All these tests were got done from a well reputed laboratory.

**Results:** Total of 113 cases, age ranging from 21-35 years with mean  $27.2 \pm 4.6$ . All were females. Subjects were predominantly married 84 ( 74.33 %), 54 (64.28%) had multiple pregnancies, 29 (25.66%) were house wives, 84 (74.33%) were working women, 34 (30.08%) were doing heavy work, sun exposure was almost negligible, 80 (70.79%) were veiled, 30(26.54%) had opened face, 11(9.73%) had opened face and forearm, 97(85.84%) were lived in flats, dietary habits were poor, black burqa were using outside. Vitamin D was deficient in 83 (73.45%) cases, insufficient in 21 (18.58%) cases and near normal in 9 cases(7.96%). In spite most of them belonged to middle class socio-economic status. The calcium was low in 90 cases (79.64%) while phosphorus was low in 83 cases (73.45%) and alkaline phosphate was not correlated positively. The X-ray of L/S spine and pelvis showed straightening of the spine and osteopenia.

**Conclusion:** Vitamin D deficiency was the main reason of back pain of the young females.

**Key Words:** Vitamin D deficiency, Young females, Veiled, Sun exposure.

## INTRODUCTION

Defective skeletal mineralization in adults leads to a condition where the people could complain with bone pain<sup>1 2 3</sup> any where in the body, most commonly in the lumbo-sacral spine. The Vitamin D play an important role<sup>4</sup> in the mineralization of a bone. It increases the intestinal absorption of calcium and related minerals. Vitamin D is a group of fat soluble, the two major forms of which are Vitamin D2 (ergocalciferol) and Vitamin D3 (cholecalciferol). Vitamin D obtained from sun exposure. The primary source of vitamin D in humans is photo activation (in the skin) of 7-dehydrocholesterol to cholecalciferol which is then converted in the liver to 25-hydroxycholecalciferol and further converted by renal to active metabolite 1,25-dihydroxycholecalciferol.

The major role of Vitamin D in the body is for calcium and phosphorus. It increases their absorption in the intestine and reabsorption of calcium from kidneys. It is also necessary for bone growth and bone remodeling.<sup>5</sup> Without Vitamin D the bones are liable to become thin and brittle.<sup>6</sup> The incidence may vary and depends upon various factors. 29 % deficient in United States 36 % in U.K.<sup>7 8</sup> Vitamin D deficiency<sup>9</sup> may arise from insufficient sun exposure<sup>10 11</sup>, malnutrition,<sup>12</sup> malabsorption through any reason and

patient with kidney diseases. Drugs like Anticonvulsant i.e. phenytoin, carbamazepine, valproate and Phenobarbital may inhibit hepatic production of 25(OH)D. The genetic component of Vitamin D deficiency may be manifested early in the life. The osteomalacia<sup>13 14 15</sup> continue to be a common problem in the tropical countries in spite of sun exposure. Calcium deficiency may occur in elderly, malnourished, and those on taking of excessive wheat bran.

In 2000 a study was conducted in Dehli which showed the prevalence of vitamin D deficiency to be 90 %. As we are living in an area where we have plenty of sunshine. Our culture and tradition placed the women on a side where they will be less exposed to sun, live in a small and crowded flat, had multiple pregnancies and less awareness of the nutritional supplements. These all lead women to an edge to face nutritional deficiencies. The primary objective was to evaluate vitamin D status in young females presented with complaint of backache in the OPDs.

## MATERIALS AND METHODS

A descriptive prospective study, conducted in a private hospital of Karachi, from Aug. 2010 to Dec. 2011. In the study 113 adults females were included between ages ranging from 21-35 years.

**Inclusion Criteria:**

- Adult female
- Age less than 40
- Resident of Karachi
- No H/o trauma.

**Exclusion Criteria:**

- Subject with known Vit. D deficiency
- History of any metabolic bone disease.
- History of malabsorption
- History of trauma
- History of joints disease
- On Vitamin D and calcium supplements.

A Proforma was completed to determine the age, marital status, pregnancies, occupation, work load, duration of sun exposure, area of skin exposed, veiled, type of residence and dietary habits.

The Vitamin D level with serum calcium, phosphorus and alkaline phosphatase were taken. X-ray lumbar/sacral spine and pelvis were performed in every case. A level of Vitamin D less than 20 was considered deficient while less than 30 was insufficient.

Serum albumin and Prothrombin time were done in all cases to exclude malabsorption Serum calcium and phosphorus help to label positive vitamin D deficiency. Analysis was performed with SPSS version 17.

**RESULTS**

Total of 113 cases, age ranging from 21-35 years,  $27.2 \pm 4.6$ . The basic characteristics were given in table 1.

**Table No.1:**

Basic Characteristics of Study		n 113
Sun Exposure		23 ( 2 Hours)
Age		
Group 1	<25years	69 (61.06%)
Group 2	>25years	44 (38.93%)
Marital status		
	Married	84 (74.33%)
	Unmarried	29 (25.66%)
Pregnancies		
	Two	30 (35.71%)
	> two	54 (64.28 %)
House wives		29 (25.66%)
Working woman		84 (74.33%)
Residence		
	Flat	97 (85.84%)
	Banglow	16 (14.15%)

All were females. Subjects were predominantly married 84 (74.33%), 54 (64.28%) had multiple pregnancies, 29 (25.66%) were house wives, 84 (74.33%) were working women, 34 (30.08%) were doing heavy work, sun exposure was in 23 (20.35%) cases, 80 (70.79%) were veiled, 22 (19.46%) had opened face, 11(9.73%) had opened face and forearm, 97 (85.84%) lived in flats,

dietary habits were poor, black burqa was being used outside. The vitamin D is low in 92% of cases.

Vitamin D was deficient in 83 cases (73.45%) and insufficient in 21 cases (18.58%) and Vitamin D were near normal in 9 cases (7.96%) .The data was seen in Table No.2. The calcium was low in 90 cases (79.64%) while phosphorus was low in 83 cases (73.45%) and alkaline phosphate was not correlated positively. It is shown in Table No. 3. In spite of such low Vitamin D X-ray of L/S spine and pelvis had not showed any classical radiological finding of Vitamin D deficiency except straightening of the spine and osteopenia.

**Table No.2:**

No. of Patient	Vitamin D status		
	Deficient	Insufficient	
113	83 (73.45 %)	21 (18.58%)	09 (7.96%)

**Table No.3:**

Data	Minimum	Maximum	Mean +SD
Age of Patient	21 years	35 years	$27.2 \pm 4.6$
Serum Vit. Dmg/ml	1.9	55.6	$11.76 \pm 6.9$
Serum calcium mg\dl	6.9	9.3	$7.7 \pm 0.63$
Serum Phosphorus mg\dl	2.0	4.4	$2.57 \pm 0.9$
Serum Alkaline phosphatase Iu/L	125	237	$176 \pm 43.13$

**DISCUSSION**

In an area with plenty of sunshine it was very unexpected to have such a low vitamin D status in our young females. It may be because of young females who are deprived from food had early marriages and multiple pregnancies, usually complain of body pain mainly backache. They are looking healthy and most of them are overweight. Clinically most of them had no sign of any organic and metabolic disease nor they complained of any gastro-intestinal upsets in past.

The females of fertile age group, whether married or not, they all had either deficient or insufficient Vit D levels. The main cause of Vitamin D deficiency behind it is not the scope of this study but we saw the actual status of Vit D in young female resident of a place where sunlight is quite sufficient through out the year. There are many studies done in United States , Italy , India,<sup>6</sup> China, Turkey,<sup>16</sup> Germany,<sup>17</sup> Saudi Arabia,<sup>12</sup> and Iran<sup>18</sup> regarding the Vit D status and they found similar results..

This high prevalence of Vit D deficiency in this age group had multiple explanations; on one side the social norms limit her activity while on the other side

nutritional lacking lead to this situation. This is a very common issue in our young females so this study was conducted to see the real status of Vit D in young females who reported to OPD with backache. The small flats which are not on the sun facing side and are usually over crowded and our females are also not be fond of playing healthy games. Parents have fear to be darkening<sup>19</sup> of skin of their daughters so to avoid sun exposures and our females had unique taste of not taking thing like fresh milk, cheese, yogurt, butter and other sources of Vit D.<sup>20</sup>

In this study the majority of the females were married and had multiple pregnancies. The sun exposure was almost negligible, in 23 cases for less than two hours in a day and the residence were in small flats. Our females used veil<sup>21</sup> when they go outside though it is a religious activity and it had its importance but when ever she had time and space so she should try to be exposed to sunlight. The females in this study were not suffering from any known gastro-intestinal disease and their serum albumin, prothrombin time and stool detailed report were normal. The cause of Vitamin D deficiency is not the scope of this article, it need further studies to elaborate but it is suggested that lack of sun exposure, lack of healthy dietary habits and excessive requirement might be the possible cause of vitamin D deficiency in this group. This all lead, to the chronic pain in the body in general and particularly in back and long bones.<sup>22 23 24 25 26 27</sup>

In short we need to take serious action for the betterment either in the form of good nutritional policies for our females and should emphasize on the construction of the buildings that should keep space for sun to enter in every home Beside this we should motivate our female to do play healthy games and take healthy balanced diet.

## CONCLUSION

This high prevalence of Vit. D in our young females will be eye opening and we should take serious action to motivate women for healthy diet, playing games and try to built building with good sun exposure in every home.

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